2009-12-18

System Description Document for Project Watchman Maritime Smart Environment (WMSE) upgrade including the system integration with the: Wireless Smart Sensor Network (WSSN)

SYSTEM DESCRIPTION DOCUMENT

FOR

Project Watchman Maritime Smart Environment (WMSE) Upgrade
Including the System Integration with the: Wireless Smart Sensor Network (WSSN)

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1 Component Overview

This section is empty if a primary Component is not specified.

There is no primary Component specified for the WMSE system. WMSE is a network of various hardware and software components that perform various levels of distributed processing. For a more detailed WMSE Component overview, please refer back to the SE4151 Final Project Report main body.

2 Originating Requirements

MDA MDA JIC Requirements [DoD MDA JIC]

Parent Requirement's Source Document(s):
MARV Performance & Vehicle Specification

Refines Higher-Level Requirement:
0 System Parameter Requirements [WMSE-REQ-0000]

Refined By Subordinate Requirements:
MDA.3 MDA-003C - The capability to aggregate, display, and analyze maritime information in order to understand the maritime environment and identify threats
MDA.3.6 MDA-003C-006T - Archive and make available historical information.
MDA.3.7 MDA-003C-007T - Push time critical alerts to decision makers
MDA.3.8 MDA-003C-008T- Analyze all source information to determine which cargos are high risk or interest
MDA.3.9 MDA-003C-009T - Analyze all source information to determine which persons are high risk or interest
MDA.4.1 MDA-004C-001T -Create a baseline of normal maritime behavior for an area or conditions of interest
MDA.4.2 MDA-004C-002T- Identify adversary patterns of behavior
MDA.4.3 MDA-004C-003T - Differentiate maritime threats from valid maritime commerce
MDA.4.4 MDA-004C-004T - Provide alerts for suspicious behavior
MDA.4.5 MDA-004C-005T - Identify adversary intent, courses of action, strengths, and weaknesses

MDA.3 MDA-003C - The capability to aggregate, display, and analyze maritime information in order to understand the maritime environment and identify threats

Requirement Statement:
The purpose of this capability is to make maritime information available to the MDA network in a useful form. This involves fusing and aggregating data so that users can quickly retrieve all of the information related to an entity of interest. The MDA network must allow analysts to easily manipulate information and be flexible enough that they can use their own creativity to detect latent patterns of threat behavior.

Source Document(s):
BAM DRM

Refines Higher-Level Requirement:
MDA MDA JIC Requirements [DoD MDA JIC]

Refined By Subordinate Requirements:
MDA.3.6 MDA-003C-006T - Archive and make available historical information.
MDA.3.7 MDA-003C-007T - Push time critical alerts to decision makers
MDA.3.8 MDA-003C-008T- Analyze all source information to determine which cargos are high risk or interest
MDA.3.9 MDA-003C-009T - Analyze all source information to determine which persons are high risk or interest

Basis Of:
Function: 3.3 Perform Contact Classification
Function: 3.3.1 Classify Normal

2 Originating Requirements

Function: 3.4.1 Perform Situational Analysis and Assessment
Function: 3.4.2 Evaluate Threat.NAE.07

MDA.3.6 MDA-003C-006T - Archive and make available historical information.

Requirement Statement:
MDA-003C-006T - Archive and make available historical information.
o One important purpose is to support post event analysis for attack attribution.

Source Document(s):
BAM DRM

Refines Higher-Level Requirement:
MDA MDA JIC Requirements [DoD MDA JIC]
MDA.3 MDA-003C - The capability to aggregate, display, and analyze maritime information in order to understand the maritime environment and identify threats

MDA.3.7 MDA-003C-007T - Push time critical alerts to decision makers

Requirement Statement:
Receive near real time tactical intelligence including indications and warnings (defined as within 5 seconds to 5 minutes of occurrence) to and from tactical forces of air, ground, and naval threats. A tactical warning is a warning after initiation of a threatening or hostile act based on an evaluation of information from all available sources. Attack assessment is an evaluation of information to determine the potential or actual nature and objectives of an attack for the purpose of providing information for timely decisions.

Source Document(s):
BAM DRM

Refines Higher-Level Requirement:
MDA MDA JIC Requirements [DoD MDA JIC]
MDA.3 MDA-003C - The capability to aggregate, display, and analyze maritime information in order to understand the maritime environment and identify threats

MDA.3.8 MDA-003C-008T- Analyze all source information to determine which cargos are high risk or interest

Requirement Statement:
Given available source information, must be able to determine which cargos, based on behavior analysis, are high risk or interest to decision makers

Source Document(s):
BAM DRM

Refines Higher-Level Requirement:
MDA MDA JIC Requirements [DoD MDA JIC]
MDA.3 MDA-003C - The capability to aggregate, display, and analyze maritime information in order to understand the maritime environment and identify threats

MDA.3.9 MDA-003C-009T - Analyze all source information to determine which

2 Originating Requirements

persons are high risk or interest

Requirement Statement:
Given available source information, must be able to determine which persons, based on behavior analysis, are high risk or interest to decision makers

Source Document(s):
BAM DRM

Refines Higher-Level Requirement:
MDA MDA JIC Requirements [DoD MDA JIC]
MDA.3 MDA-003C - The capability to aggregate, display, and analyze maritime information in order to understand the maritime environment and identify threats

MDA.4 MDA-004C - The capability to predict activity within the maritime domain

Requirement Statement:
Many non-traditional threats like terrorism or proliferation are effective when they operate within the noise level of normal everyday activities. Detecting these plots often requires merging information from all aspects of the maritime domain to detect the subtle signs of threat behavior. The ability for machines to automatically analyze mountains of data and detect anomalous behavior will be critical for making sense of the vast maritime realm. Automated threat analysis systems free analysts to work on more challenging maritime problems.

Source Document(s):
BAM DRM

Refined By Subordinate Requirements:
MDA.4.1 MDA-004C-001T -Create a baseline of normal maritime behavior for an area or conditions of interest
MDA.4.2 MDA-004C-002T- Identify adversary patterns of behavior
MDA.4.3 MDA-004C-003T - Differentiate maritime threats from valid maritime commerce
MDA.4.4 MDA-004C-004T - Provide alerts for suspicious behavior
MDA.4.5 MDA-004C-005T - Identify adversary intent, courses of action, strengths, and weaknesses

Basis Of:
Function: 3.0 Classify (Conduct Behavior Analysis)
Function: 3.4 Perform I&W
Function: 3.4.1 Perform Situational Analysis and Assessment
Function: 3.4.2 Evaluate Threat.NAE.07
Function: 3.4.3 Alert Generation.NAE.07

MDA.4.1 MDA-004C-001T -Create a baseline of normal maritime behavior for an area or conditions of interest

Requirement Statement:

Many non-traditional threats like terrorism or proliferation are effective when they operate within the noise level of normal everyday activities. Detecting these plots often requires merging information from all aspects of the maritime domain to detect the subtle signs of threat behavior. The ability for machines to automatically analyze mountains of data and detect anomalous behavior will be critical for making sense of the vast maritime realm. Automated threat analysis systems free analysts to work on more challenging maritime problems.

Source Document(s):
BAM DRM

Refines Higher-Level Requirement:
MDA MDA JIC Requirements [DoD MDA JIC]
MDA.4 MDA-004C - The capability to predict activity within the maritime domain

Basis Of:
Function: 3.2 Analyze Behavior

MDA.4.2 MDA-004C-002T- Identify adversary patterns of behavior

Requirement Statement:
Many non-traditional threats like terrorism or proliferation are effective when they operate within the noise level of normal everyday activities. Detecting these plots often requires merging information from all aspects of the maritime domain to detect the subtle signs of threat behavior. The ability for machines to automatically analyze mountains of data and detect anomalous behavior will be critical for making sense of the vast maritime realm. Automated threat analysis systems free analysts to work on more challenging maritime problems.

Source Document(s):
BAM DRM

Refines Higher-Level Requirement:
MDA MDA JIC Requirements [DoD MDA JIC]
MDA.4 MDA-004C - The capability to predict activity within the maritime domain

Basis Of:
Function: 3.2 Analyze Behavior

MDA.4.3 MDA-004C-003T - Differentiate maritime threats from valid maritime commerce

Requirement Statement:
Many non-traditional threats like terrorism or proliferation are effective when they operate within the noise level of normal everyday activities. Detecting these plots often requires merging information from all aspects of the maritime domain to detect the subtle signs of threat behavior. The ability for machines to automatically analyze mountains of data and detect anomalous behavior will be critical for making sense of the vast maritime realm. Automated threat analysis systems free analysts to work on more challenging maritime problems.

Source Document(s):
BAM DRM

2 Originating Requirements

Refines Higher-Level Requirement:
MDA MDA JIC Requirements [DoD MDA JIC]
MDA.4 MDA-004C - The capability to predict activity within the maritime domain

Basis Of:
Function: 3.2 Analyze Behavior

MDA.4.4 MDA-004C-004T - Provide alerts for suspicious behavior

Requirement Statement:
Many non-traditional threats like terrorism or proliferation are effective when they operate within the noise level of normal everyday activities. Detecting these plots often requires merging information from all aspects of the maritime domain to detect the subtle signs of threat behavior. The ability for machines to automatically analyze mountains of data and detect anomalous behavior will be critical for making sense of the vast maritime realm. Automated threat analysis systems free analysts to work on more challenging maritime problems.

Source Document(s):
BAM DRM

Refines Higher-Level Requirement:
MDA MDA JIC Requirements [DoD MDA JIC]
MDA.4 MDA-004C - The capability to predict activity within the maritime domain

MDA.4.5 MDA-004C-005T - Identify adversary intent, courses of action, strengths, and weaknesses

Requirement Statement:
Many non-traditional threats like terrorism or proliferation are effective when they operate within the noise level of normal everyday activities. Detecting these plots often requires merging information from all aspects of the maritime domain to detect the subtle signs of threat behavior. The ability for machines to automatically analyze mountains of data and detect anomalous behavior will be critical for making sense of the vast maritime realm. Automated threat analysis systems free analysts to work on more challenging maritime problems.

Source Document(s):
BAM DRM

Refines Higher-Level Requirement:
MDA MDA JIC Requirements [DoD MDA JIC]
MDA.4 MDA-004C - The capability to predict activity within the maritime domain

NCOE JIC 16.1 Collect Sensor Data

Refines Higher-Level Requirement:
NCOE JIC 6.0 Ability to Create/Produce Information in an Assured Environment

Basis Of:
Function: 4.3.4 Collect COI Data

Specifies:

2 Originating Requirements

Component: S.2.2 WSSN Agent Collection Sensors

NCOE JIC 6.0 Ability to Create/Produce Information in an Assured Environment

Refined By Subordinate Requirements:
NCOE JIC 16.1 Collect Sensor Data
NCOE JIC 6.1 Provide Smart Management of Collection Assets
NCOE JIC 6.2 Transmit Information
NCOE JIC 7.9 Perform Intelligent Search

Basis Of:
Function: 4.0 Respond

Specifies:
Component: S.2 WSSN Agent

NCOE JIC 6.1 Provide Smart Management of Collection Assets

Refines Higher-Level Requirement:
NCOE JIC 6.0 Ability to Create/Produce Information in an Assured Environment

Basis Of:
Function: 4.1 Task WSSN

Specifies:
Component: S.2.1 WSSN Agent CPU

NCOE JIC 6.2 Transmit Information

Refines Higher-Level Requirement:
NCOE JIC 6.0 Ability to Create/Produce Information in an Assured Environment

Basis Of:
Function: 4.4.2 Send WSSN Tasking Order Response to WSSN C2

Specifies:
Component: S.2.4 WSSN Agent Comms

NCOE JIC 7.9 Perform Intelligent Search

Refines Higher-Level Requirement:
NCOE JIC 6.0 Ability to Create/Produce Information in an Assured Environment

Basis Of:
Function: 4.3.1 Navigate to COI Zone

Specifies:
Component: S.2.3 WSSN Agent Detection Sensors

3 Design Constraints

0.1 System Reliability [WMSE-REQ-0001]

Design Constraint Statement:
The WMSE system shall attain a reliability of TBR (0.995) for a mission duration of 24 hours.

Source Document(s):
Design Memorandum

Refines Higher-Level Requirement:
0 System Parameter Requirements [WMSE-REQ-0000]

Generates Issues:
MARV Reliability

0.2 WMSE Special Tools [WMSE-REQ-0002]

Design Constraint Statement:
The MARV maintenance tool kit shall contain no more than TBR special tools.

Source Document(s):
Design Memorandum

Refines Higher-Level Requirement:
0 System Parameter Requirements [WMSE-REQ-0000]

Generates Issues:
MARV Special Tools

0.5 Computing Capacity [WMSE-REQ-0005]

Design Constraint Statement:
The system computing capacity shall maintain during peak loading a 10% average margin.

Source Document(s):
Design Memorandum

1.4.1 Agent Navigation Accuracy [WSSN-REQ-0031]

Design Constraint Statement:
The Agents shall not exceed a 0.05% distance traveled median error (CEP 50) for mission duration.

Refines Higher-Level Requirement:
1.4 Agent Navigation Requirements [WSSN -REQ-0003]

Causes Risks:
Navigation and Control Accuracy

4 Performance Requirements

0 System Parameter Requirements [WMSE-REQ-0000]

Source Document(s):
MARV Performance & Vehicle Specification

Refined By Lower-Level Requirements:
0.1 System Reliability [WMSE-REQ-0001]
0.2 WMSE Special Tools [WMSE-REQ-0002]
0.3 WMSE Communication Capacity [WMSE-REQ-0003]
1 WSSN Agent Parameter Requirements [WMSE-REQ-0001]
MDA MDA JIC Requirements [DoD MDA JIC]

0.3 WMSE Communication Capacity [WMSE-REQ-0003]

Performance Requirement Statement:
The communication capacity shall be a minimum 11 MB/sec.

Refines Higher-Level Requirement:
0 System Parameter Requirements [WMSE-REQ-0000]

0.4 WMSE Time Requirement [WMSE-REQ-0004]

Performance Requirement Statement:
The System shall have the ability to detect, track, analyze and determine the behavior for, and react to (via autonomous vehicle tracking, localizing, collecting data, and transmitting data) a target of interest in the test area in 3 minutes or less.

1 WSSN Agent Parameter Requirements [WMSE-REQ-0001]

Refines Higher-Level Requirement:
0 System Parameter Requirements [WMSE-REQ-0000]

Refined By Lower-Level Requirements:
1.1 Agent Payload Support [WSSN-REQ-0011]
1.2 Agent Configurability [WSSN-REQ-0012]
1.3 Agent Operating Speed Requirements [WSSN-REQ-0002]
1.4 Agent Navigation Requirements [WSSN -REQ-0003]
1.5 WSSN Connectivity Requirements [WSSN-REQ-0004]
1.6 Agent Payload Requirements [WSSN-REQ-0005]

1.1 Agent Payload Support [WSSN-REQ-0011]

Performance Requirement Statement:
The WSSN Agent shall be configurable to support multiple mission types.

Source Document(s):
Design Memorandum

Refines Higher-Level Requirement:
1 WSSN Agent Parameter Requirements [WMSE-REQ-0001]

4 Performance Requirements

1.2 Agent Configurability [WSSN-REQ-0012]

Performance Requirement Statement:
The WSSN Agents shall be configurable to support multiple mission types.

Refines Higher-Level Requirement:
1 WSSN Agent Parameter Requirements [WMSE-REQ-0001]

1.3 Agent Operating Speed Requirements [WSSN-REQ-0002]

Source Document(s):
MARV Performance & Vehicle Specification

Refines Higher-Level Requirement:
1 WSSN Agent Parameter Requirements [WMSE-REQ-0001]

Refined By Lower-Level Requirements:
1.3.1 Agent Operating Speed [WSSN-REQ-00021]
1.3.2 Agent Endurance Requirements [WSSN-REQ-0022]

1.3.1 Agent Operating Speed [WSSN-REQ-00021]

Performance Requirement Statement:
The Agents shall attain a maximum speed of 1 ft per sec.

Refines Higher-Level Requirement:
1.3 Agent Operating Speed Requirements [WSSN-REQ-0002]

1.3.2 Agent Endurance Requirements [WSSN-REQ-0022]

Performance Requirement Statement:
Agents shall achieve max battery life per the spec of the COTS Lego Mindstorm system

Source Document(s):
MARV Performance & Vehicle Specification

Refines Higher-Level Requirement:
1.3 Agent Operating Speed Requirements [WSSN-REQ-0002]

Refined By Lower-Level Requirements:
1.3.2.1 Agent Transit/Survey Endurance [WSSN-REQ-0221]

1.3.2.1 Agent Transit/Survey Endurance [WSSN-REQ-0221]

Performance Requirement Statement:
The Agents shall attain a minimum transit or survey endurance of 6 hours at .5 f/s

Refines Higher-Level Requirement:
1.3.2 Agent Endurance Requirements [WSSN-REQ-0022]

1.4 Agent Navigation Requirements [WSSN -REQ-0003]

Source Document(s):
MARV Performance & Vehicle Specification

Refines Higher-Level Requirement:
1 WSSN Agent Parameter Requirements [WMSE-REQ-0001]

Refined By Lower-Level Requirements:
1.4.1 Agent Navigation Accuracy [WSSN-REQ-0031]

1.5 WSSN Connectivity Requirements [WSSN-REQ-0004]

Performance Requirement Statement:
Agents shall be able to communicate via Bluetooth over USB interface

Source Document(s):
MARV Performance & Vehicle Specification

Refines Higher-Level Requirement:
1 WSSN Agent Parameter Requirements [WMSE-REQ-0001]

Refined By Lower-Level Requirements:
1.5.1 WSSN Blue Tooth Range Requirements

1.5.1 WSSN Blue Tooth Range Requirements

Performance Requirement Statement:
USB range for communications between WSSN and the Node Command center shall be at least 25 feet

Refines Higher-Level Requirement:
1.5 WSSN Connectivity Requirements [WSSN-REQ-0004]

1.6 Agent Payload Requirements [WSSN-REQ-0005]

Source Document(s):
MARV Performance & Vehicle Specification

Refines Higher-Level Requirement:
1 WSSN Agent Parameter Requirements [WMSE-REQ-0001]

Refined By Lower-Level Requirements:
1.6.1 Color Cameras [WSSN-REQ-0051]
1.6.2 Color Sensor
1.6.3 Self Tracking [WSSN-REQ-0052]

1.6.1 Color Cameras [WSSN-REQ-0051]

Performance Requirement Statement:
The Lego MINDSTORM platform shall integrate color camera with the capability to provide video RGB tracking and parameters.

Refines Higher-Level Requirement:
1.6 Agent Payload Requirements [WSSN-REQ-0005]

1.6.2 Color Sensor

Performance Requirement Statement:

The Lego MINDSTORM platform shall integrate color sensor with the capability to provide RGB parameters.

Refines Higher-Level Requirement:
1.6 Agent Payload Requirements [WSSN-REQ-0005]

1.6.3 Self Tracking [WSSN-REQ-0052]

Performance Requirement Statement:
The Lego MINDSTORM platform shall integrate self tracking capability.

Refines Higher-Level Requirement:
1.6 Agent Payload Requirements [WSSN-REQ-0005]

5 Functional Behavior Model

Part I - Function List

0 Enhance Domain Awareness
1.0 Detect
1.1 Monitor Domain
1.2 Determine Contact Presence
1.3 Collect Video Data
1.4 Store Video Data
1.5 Manage Video Collection
2.0 Track
2.1 Read Video Data
2.2 Process Video Data
2.3 Build Contact Track
3.0 Classify (Conduct Behavior Analysis)
3.1 Read Contact Data Files
3.1.1 Feature Extraction.NAE.07
3.2 Analyze Behavior
3.2.1 Read Observed Sequence
3.2.2 Read Stored Behavior Sequences
3.2.3 Build Production Matrix
3.2.4 Build Cost Matrix
3.2.5 Calculate Costs
3.3 Perform Contact Classification
3.3.1 Classify Normal
3.3.2 Classify Abnormal
3.3.3 Classify Unknown
3.4 Perform I&W
3.4.1 Perform Situational Analysis and Assessment
3.4.2 Evaluate Threat.NAE.07
3.4.3 Alert Generation.NAE.07
4.0 Respond
4.1 Task WSSN
4.1.1 Receive WSSN Tasking Order Data from Watchman Server
4.1.2 Generate WSSN Tasking Order
4.1.3 Send WSSN Tasking Order to WSSN
4.2 Process Tasking Order
4.2.1 Receive WSSN Tasking Order from WSSN C2
4.2.2 Get Battery Voltages
4.2.2.1 Determine Own Battery Voltage
4.2.2.2 Send Own Battery Voltage to Other Agent

Part II - Behavior Model

0 Enhance Domain Awareness

Allocated To:
P Electrical Power

Table 1 0 Enhance Domain Awareness Interfacing Items

Interfacing Items	Source / Destination
Crew/Operator	Triggers Function(s): 0 Enhance Domain Awareness 1.5 Manage Video Collection 3.4.2 Evaluate Threat.NAE.07

5 Functional Behavior Model

Table 1 0 Enhance Domain Awareness Interfacing Items

Interfacing Items	Source / Destination
	3.4.3 Alert Generation.NAE.07 O Perform Overhead Functions [UUV-FCN-0020] O.4 Perform User Interface Functions
Disseminated Intelligence.NAE.07	Input To: 0 Enhance Domain Awareness 3.0 Classify (Conduct Behavior Analysis) 3.2 Analyze Behavior 3.2.2 Read Stored Behavior Sequences 3.4.1 Perform Situational Analysis and Assessment
Mission Data [UUV-ITM-0001]	Input To: 0 Enhance Domain Awareness 3.0 Classify (Conduct Behavior Analysis) 3.2 Analyze Behavior 3.2.2 Read Stored Behavior Sequences 3.2.3 Build Production Matrix 3.4.1 Perform Situational Analysis and Assessment
User Commands	Input To: 0 Enhance Domain Awareness 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07 O.4 Perform User Interface Functions
User Requests for Data	Input To: 0 Enhance Domain Awareness 1.0 Detect 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.2 Evaluate Threat.NAE.07 O.4 Perform User Interface Functions Triggers Function(s): 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data

5 Functional Behavior Model

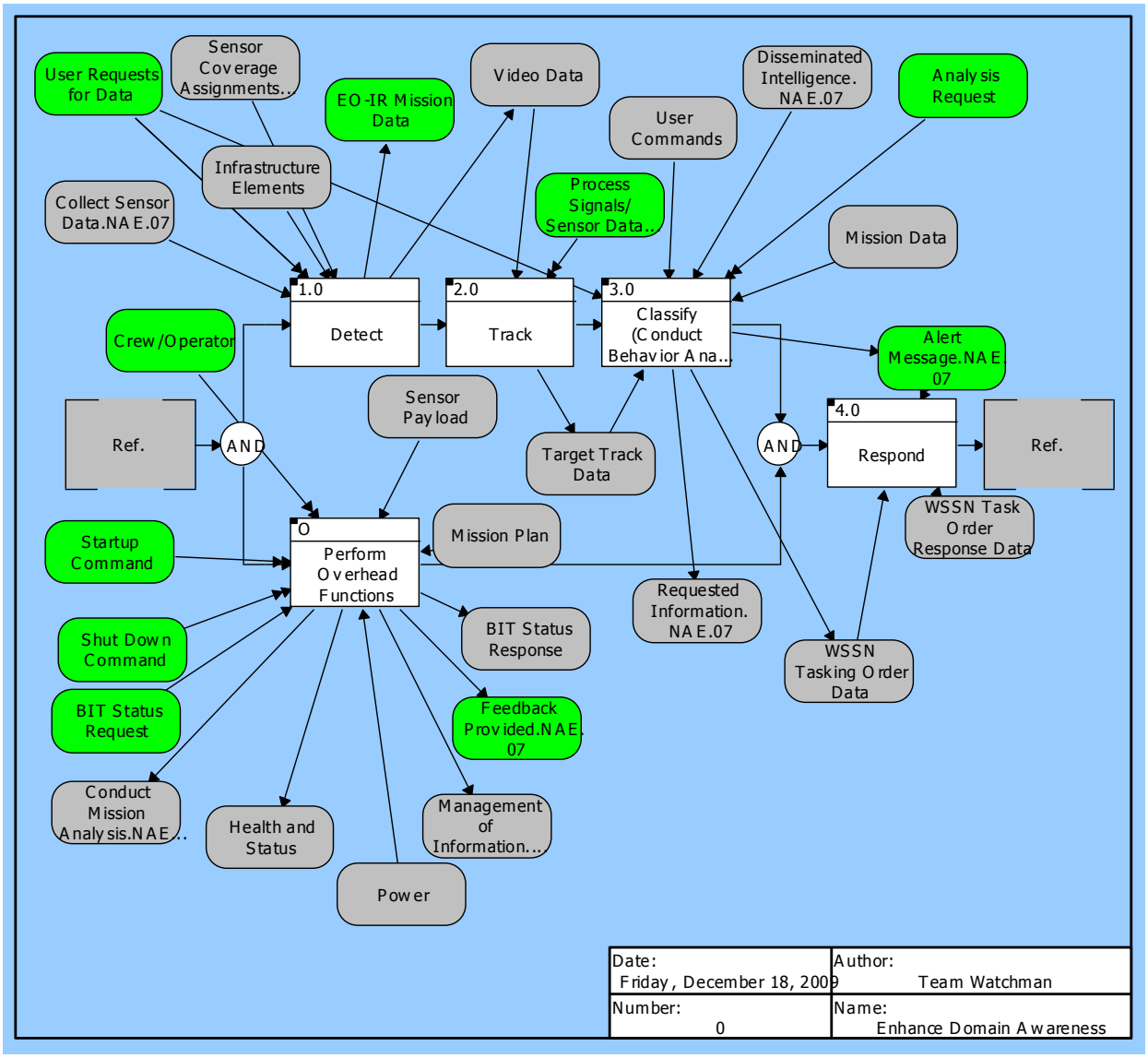

Figure 1 Enhance Domain Awareness Enhanced FFBD

5 Functional Behavior Model

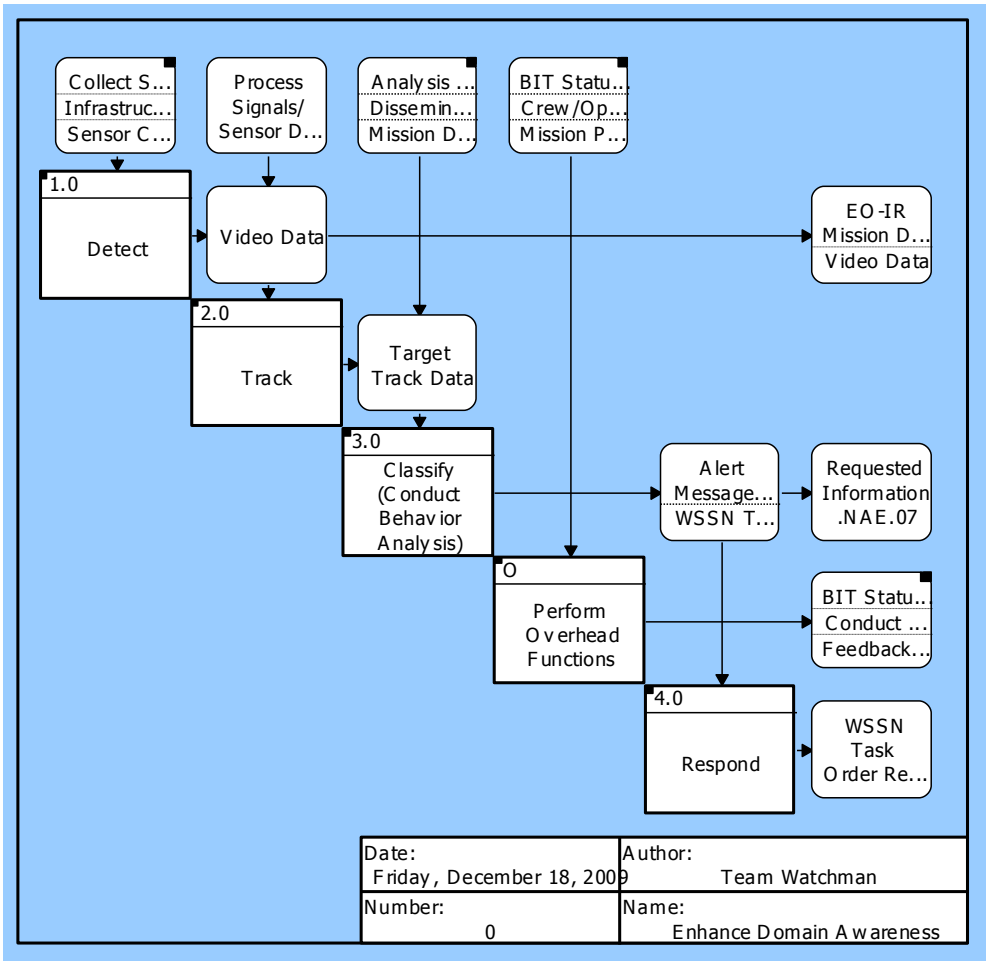

Figure 2 Enhance Domain Awareness N2 Diagram

5 Functional Behavior Model

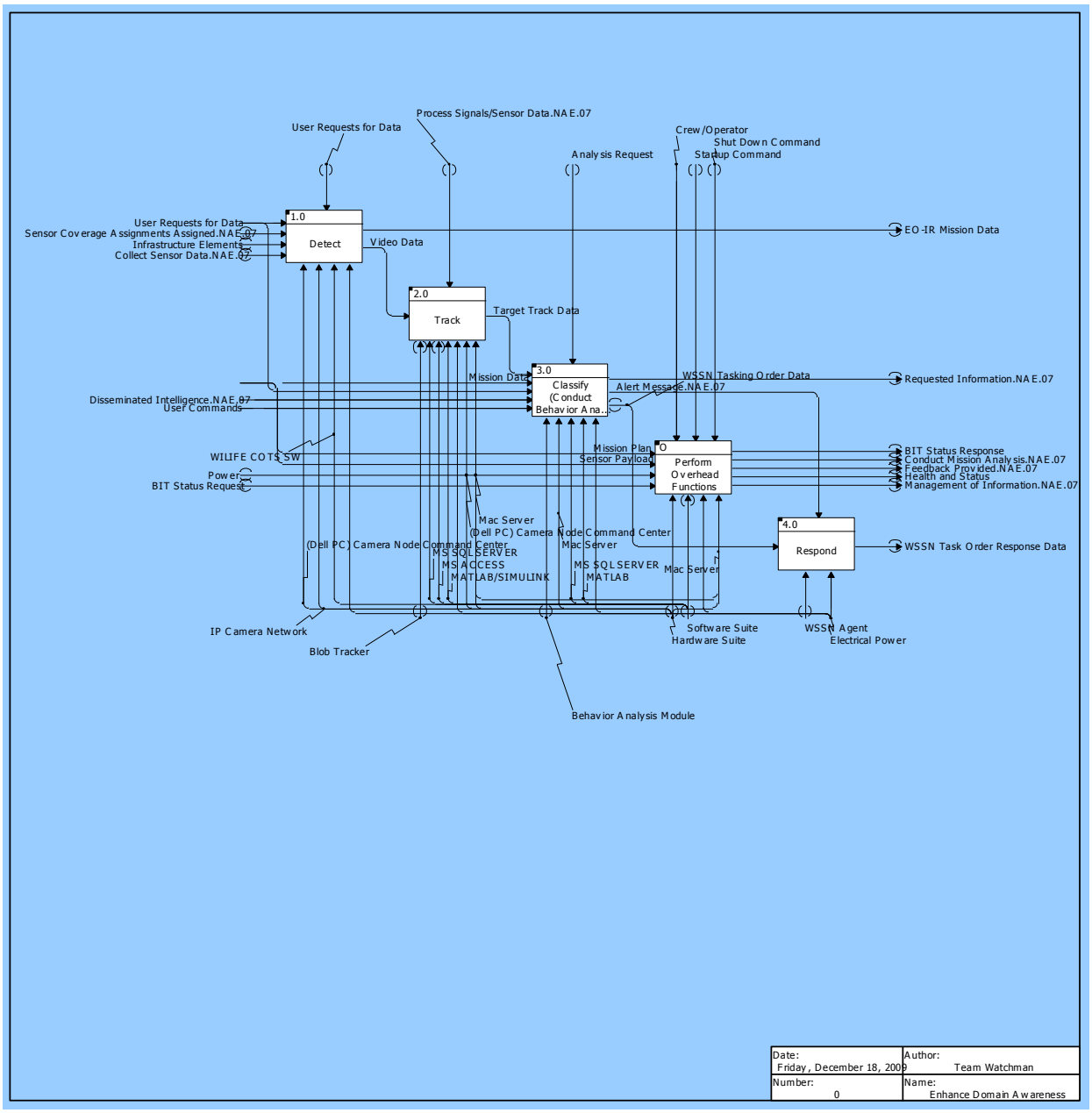

Figure 3 Enhance Domain Awareness IDEF0 Diagram

1.0 Detect

Allocated To:

HW.3 (Dell PC) Camera Node Command Center
HW.4 IP Camera Network
P Electrical Power
S.5 WILIFE COTS SW

5 Functional Behavior Model

Table 2 1.0 Detect Interfacing Items

Interfacing Items	Source / Destination
Collect Sensor Data.NAE.07	Input To: 1.0 Detect 1.3 Collect Video Data
EO-IR Mission Data	Triggers Function(s): 2.3 Build Contact Track Output From: 1.0 Detect 1.4 Store Video Data 2.2 Process Video Data
Infrastructure Elements	Input To: 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data Output From: 1.5 Manage Video Collection
Sensor Coverage Assignments Assigned.NAE.07	Input To: 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data Output From: 1.5 Manage Video Collection
User Requests for Data	Input To: 0 Enhance Domain Awareness 1.0 Detect 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.2 Evaluate Threat.NAE.07 O.4 Perform User Interface Functions Triggers Function(s): 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data
Video Data	Input To:

5 Functional Behavior Model

Table 2 1.0 Detect Interfacing Items

Interfacing Items	Source / Destination
	1.4 Store Video Data 2.0 Track 2.1 Read Video Data Output From: 1.0 Detect 1.3 Collect Video Data

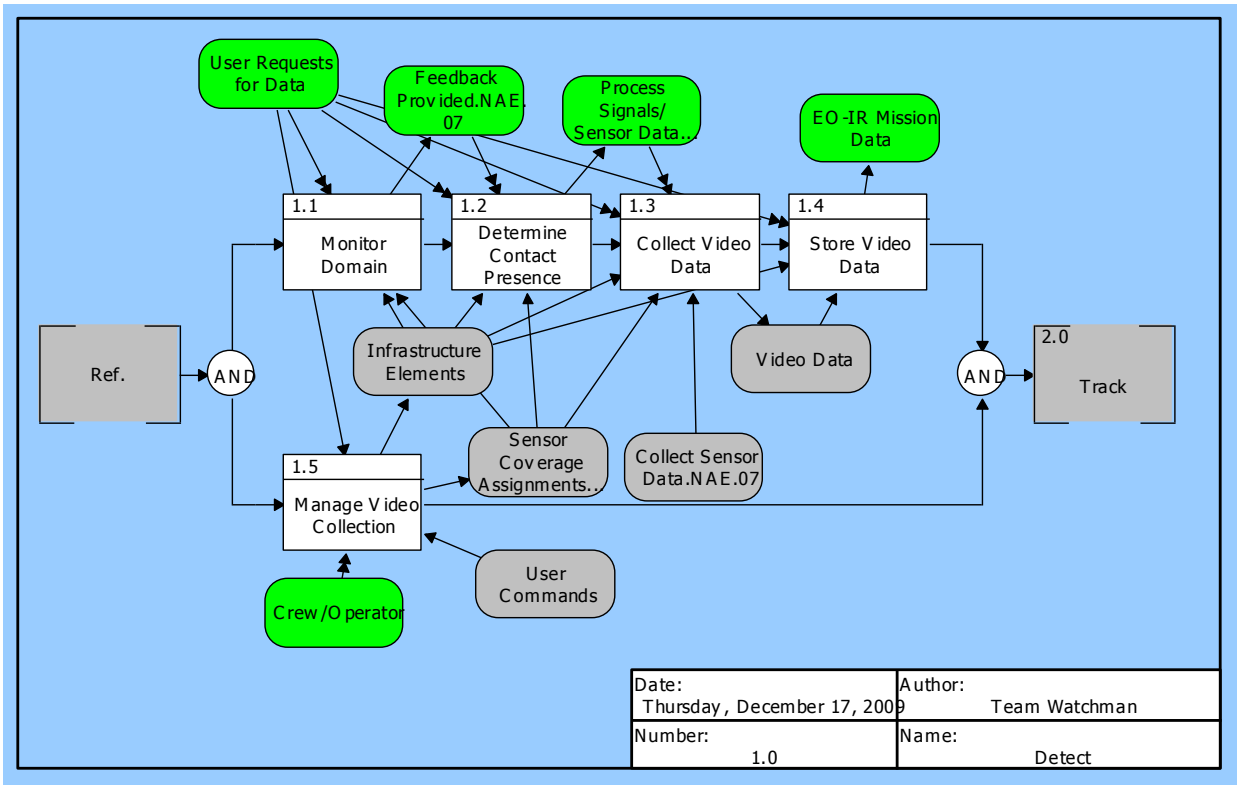

Figure 4 Detect Enhanced FFBD

5 Functional Behavior Model

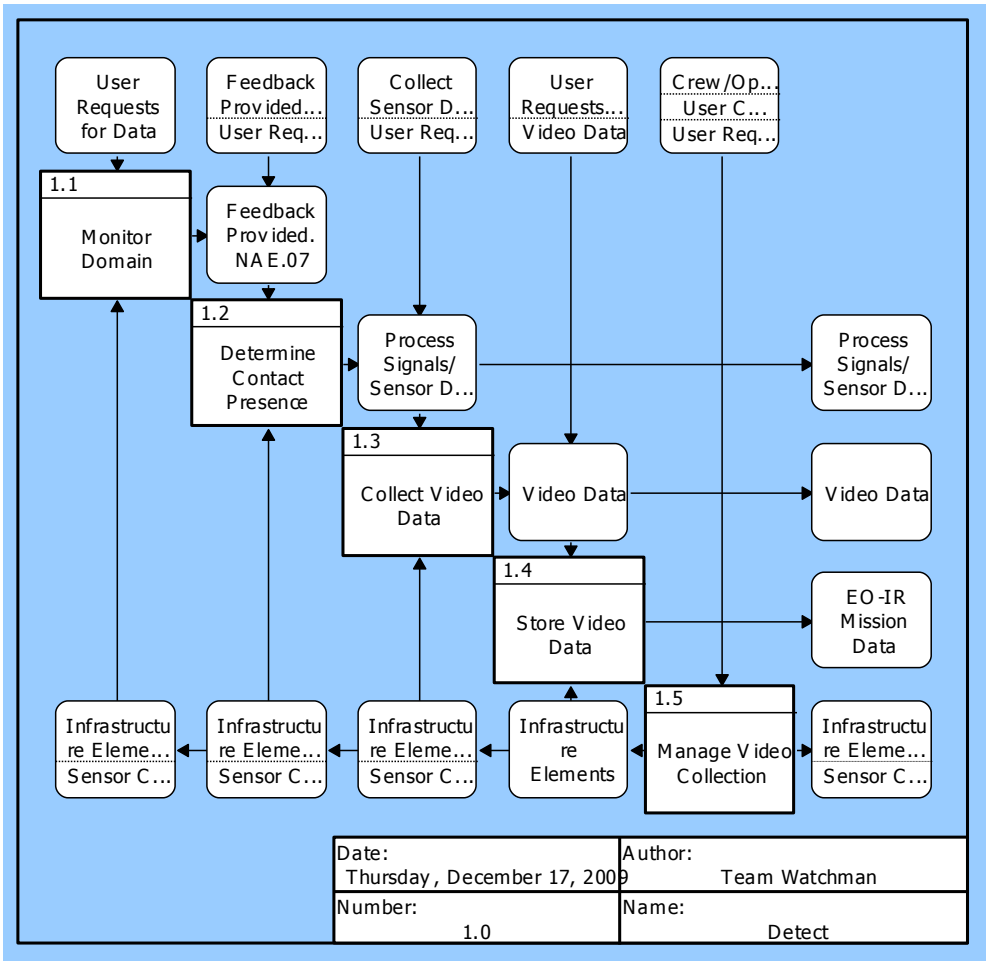

Figure 5 Detect N2 Diagram

5 Functional Behavior Model

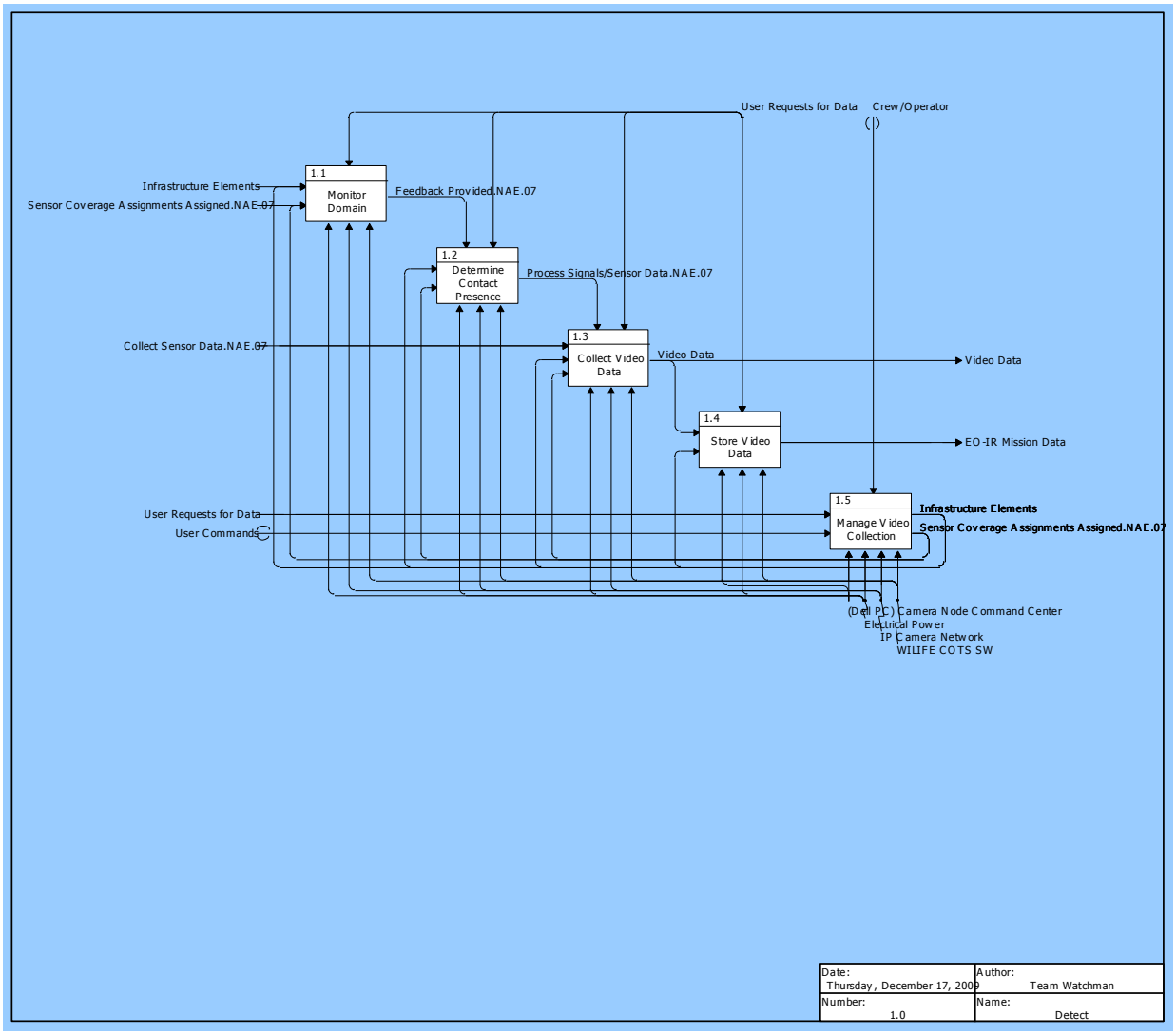

Figure 6 Detect IDEF0 Diagram

1.1 Monitor Domain

Allocated To:

HW.4 IP Camera Network
P Electrical Power
S.5 WILIFE COTS SW

Table 3 1.1 Monitor Domain Interfacing Items

Interfacing Items	Source / Destination
Feedback Provided.NAE.07	Triggers Function(s): 1.2 Determine Contact Presence Output From: 1.1 Monitor Domain

5 Functional Behavior Model

Table 3 1.1 Monitor Domain Interfacing Items

Interfacing Items	Source / Destination
	O Perform Overhead Functions [UUV-FCN-0020] O.1 Perform Startup [UUV-FCN-0022] O.4 Perform User Interface Functions O.5 Perform Shut Down [UUV-FCN-0058]
Infrastructure Elements	Input To: 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data Output From: 1.5 Manage Video Collection
Sensor Coverage Assignments Assigned.NAE.07	Input To: 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data Output From: 1.5 Manage Video Collection
User Requests for Data	Input To: 0 Enhance Domain Awareness 1.0 Detect 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.2 Evaluate Threat.NAE.07 O.4 Perform User Interface Functions Triggers Function(s): 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data

1.2 Determine Contact Presence

Allocated To:
HW.4 IP Camera Network
P Electrical Power
S.5 WILIFE COTS SW

5 Functional Behavior Model

Table 4 1.2 Determine Contact Presence Interfacing Items

Interfacing Items	Source / Destination
Feedback Provided.NAE.07	Triggers Function(s): 1.2 Determine Contact Presence Output From: 1.1 Monitor Domain O Perform Overhead Functions [UUV-FCN-0020] O.1 Perform Startup [UUV-FCN-0022] O.4 Perform User Interface Functions O.5 Perform Shut Down [UUV-FCN-0058]
Infrastructure Elements	Input To: 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data Output From: 1.5 Manage Video Collection
Process Signals/Sensor Data.NAE.07	Input To: 3.1 Read Contact Data Files Triggers Function(s): 1.3 Collect Video Data 2.0 Track 2.1 Read Video Data 2.2 Process Video Data Output From: 1.2 Determine Contact Presence
Sensor Coverage Assignments Assigned.NAE.07	Input To: 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data Output From: 1.5 Manage Video Collection
User Requests for Data	Input To: 0 Enhance Domain Awareness 1.0 Detect 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W

5 Functional Behavior Model

Table 4 1.2 Determine Contact Presence Interfacing Items

Interfacing Items	Source / Destination
	3.4.2 Evaluate Threat.NAE.07 O.4 Perform User Interface Functions Triggers Function(s): 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data

1.3 Collect Video Data

Allocated To:
HW.4 IP Camera Network
P Electrical Power
S.5 WILIFE COTS SW

Table 5 1.3 Collect Video Data Interfacing Items

Interfacing Items	Source / Destination
Collect Sensor Data.NAE.07	Input To: 1.0 Detect 1.3 Collect Video Data
Infrastructure Elements	Input To: 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data Output From: 1.5 Manage Video Collection
Process Signals/Sensor Data.NAE.07	Input To: 3.1 Read Contact Data Files Triggers Function(s): 1.3 Collect Video Data 2.0 Track 2.1 Read Video Data 2.2 Process Video Data Output From: 1.2 Determine Contact Presence
Sensor Coverage Assignments Assigned.NAE.07	Input To:

Table 5 1.3 Collect Video Data Interfacing Items

Interfacing Items	Source / Destination
	1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data Output From: 1.5 Manage Video Collection
User Requests for Data	Input To: 0 Enhance Domain Awareness 1.0 Detect 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.2 Evaluate Threat.NAE.07 O.4 Perform User Interface Functions Triggers Function(s): 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data
Video Data	Input To: 1.4 Store Video Data 2.0 Track 2.1 Read Video Data Output From: 1.0 Detect 1.3 Collect Video Data

1.4 Store Video Data

Allocated To:
HW.3 (Dell PC) Camera Node Command Center
P Electrical Power
S.5 WILIFE COTS SW

Table 6 1.4 Store Video Data Interfacing Items

Interfacing Items	Source / Destination
EO-IR Mission Data	Triggers Function(s): 2.3 Build Contact Track

5 Functional Behavior Model

Table 6 1.4 Store Video Data Interfacing Items

Interfacing Items	Source / Destination
	Output From: 1.0 Detect 1.4 Store Video Data 2.2 Process Video Data
Infrastructure Elements	Input To: 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data Output From: 1.5 Manage Video Collection
User Requests for Data	Input To: 0 Enhance Domain Awareness 1.0 Detect 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.2 Evaluate Threat.NAE.07 O.4 Perform User Interface Functions Triggers Function(s): 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data
Video Data	Input To: 1.4 Store Video Data 2.0 Track 2.1 Read Video Data Output From: 1.0 Detect 1.3 Collect Video Data

1.5 Manage Video Collection

Allocated To:
HW.3 (Dell PC) Camera Node Command Center
HW.4 IP Camera Network
P Electrical Power

S.5 WILIFE COTS SW

Table 7 1.5 Manage Video Collection Interfacing Items

Interfacing Items	Source / Destination
Crew/Operator	Triggers Function(s): 0 Enhance Domain Awareness 1.5 Manage Video Collection 3.4.2 Evaluate Threat.NAE.07 3.4.3 Alert Generation.NAE.07 O Perform Overhead Functions [UUV-FCN-0020] O.4 Perform User Interface Functions
Infrastructure Elements	Input To: 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data Output From: 1.5 Manage Video Collection
Sensor Coverage Assignments Assigned.NAE.07	Input To: 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data Output From: 1.5 Manage Video Collection
User Commands	Input To: 0 Enhance Domain Awareness 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07 O.4 Perform User Interface Functions
User Requests for Data	Input To: 0 Enhance Domain Awareness 1.0 Detect 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.2 Evaluate Threat.NAE.07 O.4 Perform User Interface Functions

Table 7 1.5 Manage Video Collection Interfacing Items

Interfacing Items	Source / Destination
	Triggers Function(s): 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data

2.0 Track

Allocated To:
HW.1 Mac Server
HW.3 (Dell PC) Camera Node Command Center
P Electrical Power
S.2 MATLAB/SIMULINK
S.3 MS ACCESS
S.4 MS SQL SERVER
T.1 Blob Tracker

Table 8 2.0 Track Interfacing Items

Interfacing Items	Source / Destination
Process Signals/Sensor Data.NAE.07	Input To: 3.1 Read Contact Data Files Triggers Function(s): 1.3 Collect Video Data 2.0 Track 2.1 Read Video Data 2.2 Process Video Data Output From: 1.2 Determine Contact Presence
Target Track Data	Input To: 3.0 Classify (Conduct Behavior Analysis) 3.1 Read Contact Data Files Output From: 2.0 Track 2.3 Build Contact Track
Video Data	Input To: 1.4 Store Video Data 2.0 Track 2.1 Read Video Data Output From:

5 Functional Behavior Model

Table 8 2.0 Track Interfacing Items

Interfacing Items	Source / Destination
	1.0 Detect 1.3 Collect Video Data

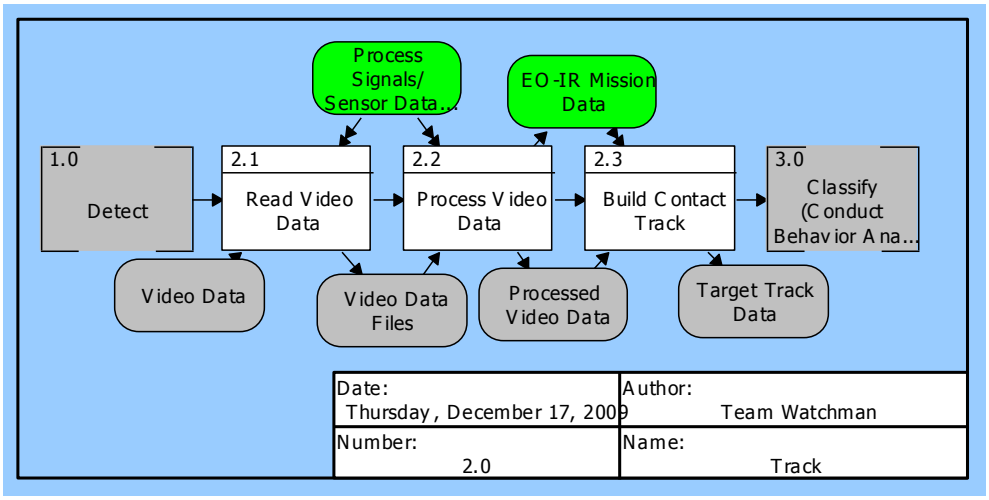

Figure 7 Track Enhanced FFBD

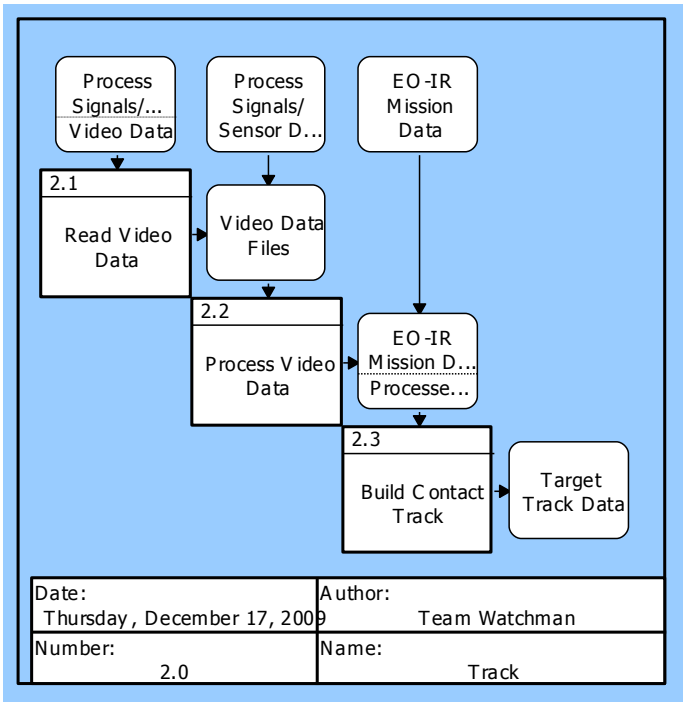

Figure 8 Track N2 Diagram

5 Functional Behavior Model

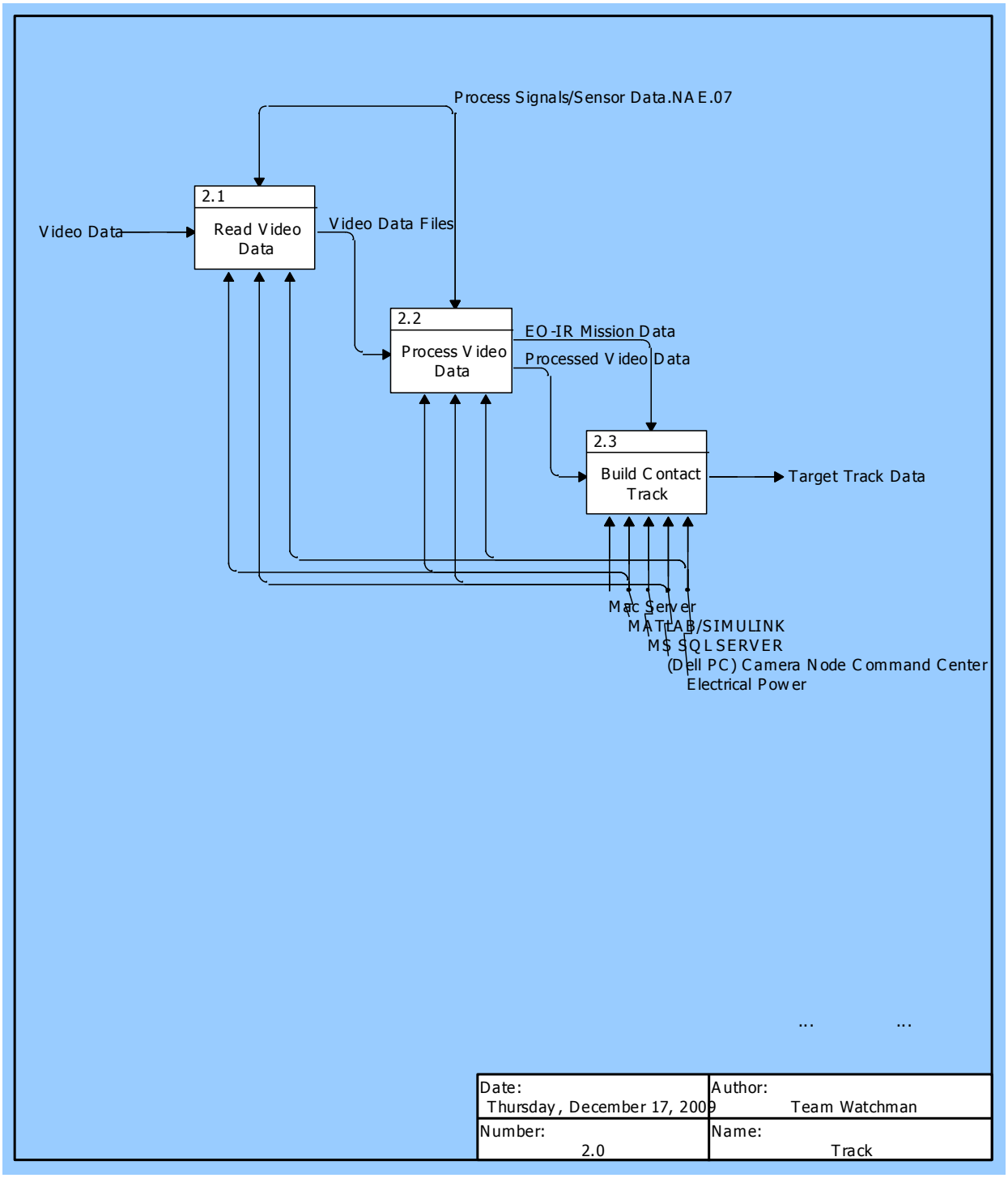

Figure 9 Track IDEF0 Diagram

2.1 Read Video Data

Allocated To:

HW.3 (Dell PC) Camera Node Command Center

P Electrical Power
S.2 MATLAB/SIMULINK

Table 9 2.1 Read Video Data Interfacing Items

Interfacing Items	Source / Destination
Process Signals/Sensor Data.NAE.07	Input To: 3.1 Read Contact Data Files Triggers Function(s): 1.3 Collect Video Data 2.0 Track 2.1 Read Video Data 2.2 Process Video Data Output From: 1.2 Determine Contact Presence
Video Data	Input To: 1.4 Store Video Data 2.0 Track 2.1 Read Video Data Output From: 1.0 Detect 1.3 Collect Video Data
Video Data Files	Input To: 2.2 Process Video Data Output From: 2.1 Read Video Data

2.2 Process Video Data

Allocated To:
HW.3 (Dell PC) Camera Node Command Center
P Electrical Power
S.2 MATLAB/SIMULINK

Table 10 2.2 Process Video Data Interfacing Items

Interfacing Items	Source / Destination
EO-IR Mission Data	Triggers Function(s): 2.3 Build Contact Track Output From: 1.0 Detect 1.4 Store Video Data 2.2 Process Video Data

Table 10 2.2 Process Video Data Interfacing Items

Interfacing Items	Source / Destination
Process Signals/Sensor Data.NAE.07	Input To: 3.1 Read Contact Data Files Triggers Function(s): 1.3 Collect Video Data 2.0 Track 2.1 Read Video Data 2.2 Process Video Data Output From: 1.2 Determine Contact Presence
Processed Video Data	Input To: 2.3 Build Contact Track Output From: 2.2 Process Video Data
Video Data Files	Input To: 2.2 Process Video Data Output From: 2.1 Read Video Data

2.3 Build Contact Track

Allocated To:
HW.1 Mac Server
HW.3 (Dell PC) Camera Node Command Center
P Electrical Power
S.2 MATLAB/SIMULINK
S.4 MS SQL SERVER

Table 11 2.3 Build Contact Track Interfacing Items

Interfacing Items	Source / Destination
EO-IR Mission Data	Triggers Function(s): 2.3 Build Contact Track Output From: 1.0 Detect 1.4 Store Video Data 2.2 Process Video Data
Processed Video Data	Input To: 2.3 Build Contact Track Output From: 2.2 Process Video Data

Table 11 2.3 Build Contact Track Interfacing Items

Interfacing Items	Source / Destination
Target Track Data	Input To: 3.0 Classify (Conduct Behavior Analysis) 3.1 Read Contact Data Files Output From: 2.0 Track 2.3 Build Contact Track

3.0 Classify (Conduct Behavior Analysis)

Allocated To:
- B Behavior Analysis Module
- HW.1 Mac Server
- P Electrical Power
- S.1 MATLAB
- S.4 MS SQL SERVER

Based On:
- MDA.4 MDA-004C - The capability to predict activity within the maritime domain

Table 12 3.0 Classify (Conduct Behavior Analysis) Interfacing Items

Interfacing Items	Source / Destination
Alert Message.NAE.07	Triggers Function(s): 4.0 Respond 4.1 Task WSSN 4.1.1 Receive WSSN Tasking Order Data from Watchman Server Output From: 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07
Analysis Request	Triggers Function(s): 3.0 Classify (Conduct Behavior Analysis) 3.1 Read Contact Data Files 3.2 Analyze Behavior 3.2.1 Read Observed Sequence 3.2.2 Read Stored Behavior Sequences 3.2.3 Build Production Matrix 3.2.4 Build Cost Matrix 3.2.5 Calculate Costs
Disseminated Intelligence.NAE.07	Input To: 0 Enhance Domain Awareness

5 Functional Behavior Model

Table 12 3.0 Classify (Conduct Behavior Analysis) Interfacing Items

Interfacing Items	Source / Destination
	3.0 Classify (Conduct Behavior Analysis) 3.2 Analyze Behavior 3.2.2 Read Stored Behavior Sequences 3.4.1 Perform Situational Analysis and Assessment
Mission Data [UUV-ITM-0001]	Input To: 0 Enhance Domain Awareness 3.0 Classify (Conduct Behavior Analysis) 3.2 Analyze Behavior 3.2.2 Read Stored Behavior Sequences 3.2.3 Build Production Matrix 3.4.1 Perform Situational Analysis and Assessment
Requested Information.NAE.07	Output From: 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07
Target Track Data	Input To: 3.0 Classify (Conduct Behavior Analysis) 3.1 Read Contact Data Files Output From: 2.0 Track 2.3 Build Contact Track
User Commands	Input To: 0 Enhance Domain Awareness 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07 O.4 Perform User Interface Functions
User Requests for Data	Input To: 0 Enhance Domain Awareness 1.0 Detect 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.2 Evaluate Threat.NAE.07 O.4 Perform User Interface Functions Triggers Function(s): 1.0 Detect 1.1 Monitor Domain

5 Functional Behavior Model

Table 12 3.0 Classify (Conduct Behavior Analysis) Interfacing Items

Interfacing Items	Source / Destination
	1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data
WSSN Tasking Order Data	Input To: 4.0 Respond 4.1 Task WSSN 4.1.2 Generate WSSN Tasking Order 4.1.3 Send WSSN Tasking Order to WSSN Output From: 3.0 Classify (Conduct Behavior Analysis)

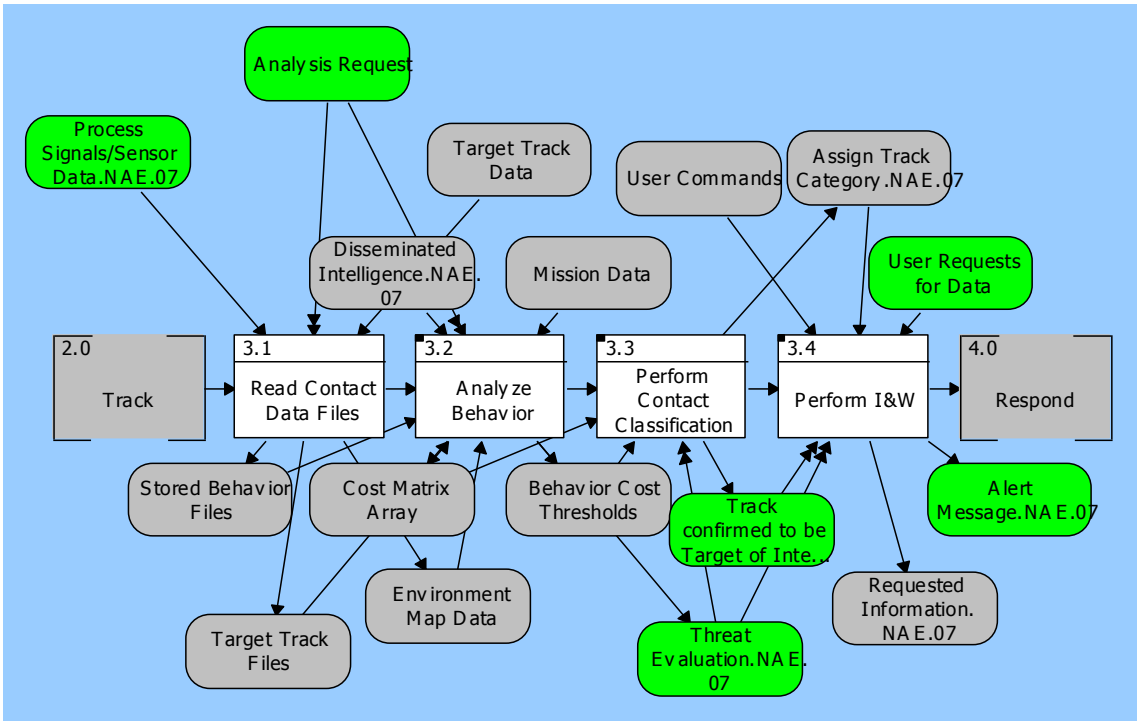

Figure 10 Classify (Conduct Behavior Analysis) Enhanced FFBD

5 Functional Behavior Model

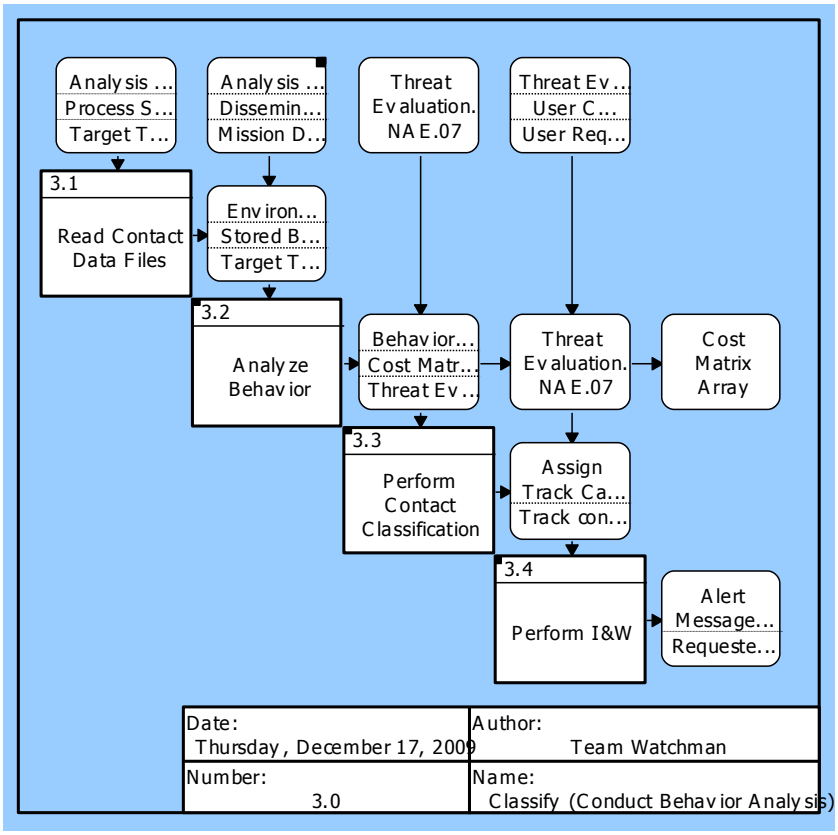

Figure 11 Classify (Conduct Behavior Analysis) N2 Diagram

5 Functional Behavior Model

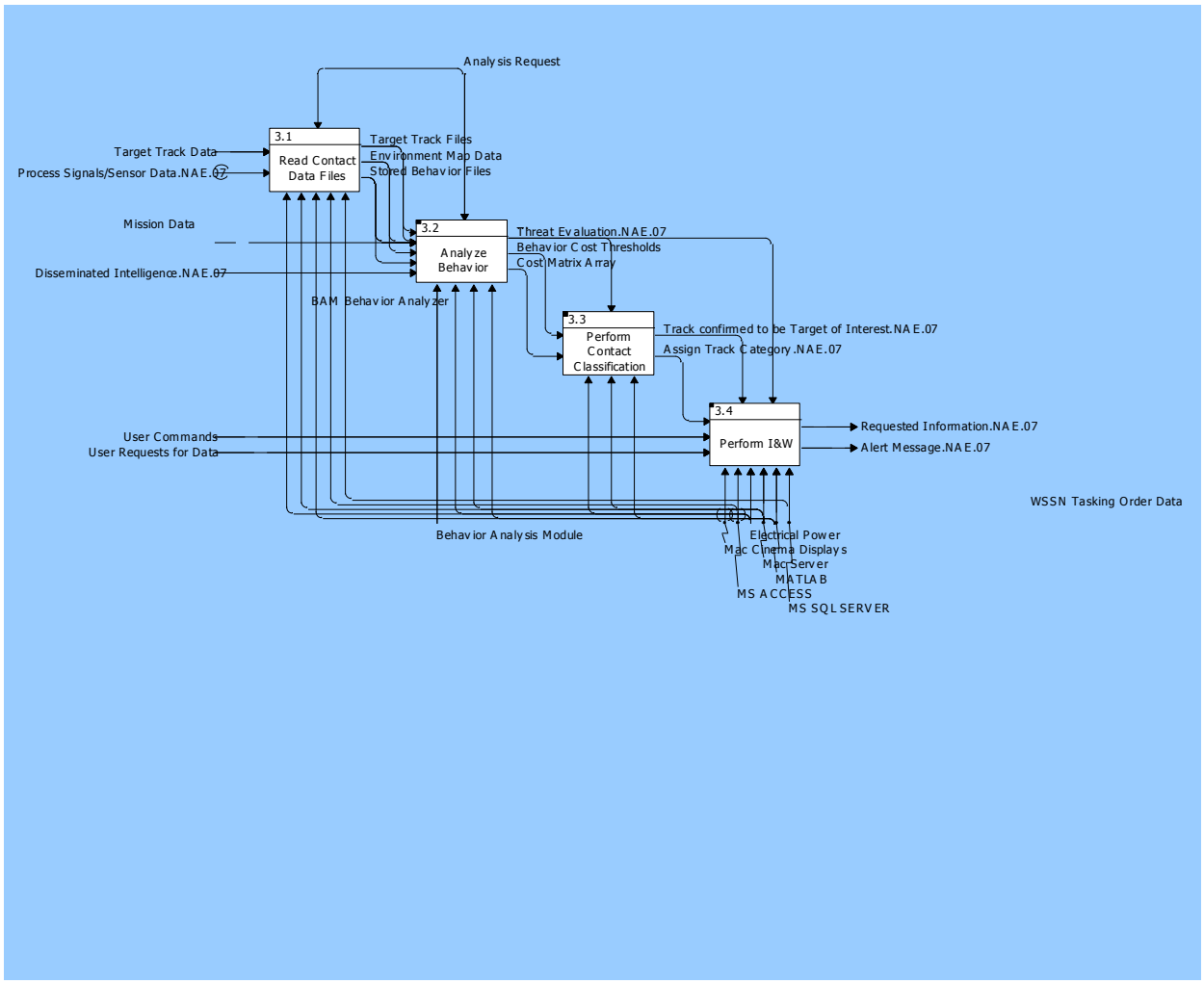

Figure 12 Classify (Conduct Behavior Analysis) IDEF0 Diagram

3.1 Read Contact Data Files

Allocated To:

HW.1 Mac Server
P Electrical Power
S.1 MATLAB
S.3 MS ACCESS
S.4 MS SQL SERVER

Table 13 3.1 Read Contact Data Files Interfacing Items

Interfacing Items	Source / Destination
Analysis Request	Triggers Function(s): 3.0 Classify (Conduct Behavior Analysis) 3.1 Read Contact Data Files 3.2 Analyze Behavior

5 Functional Behavior Model

Table 13 3.1 Read Contact Data Files Interfacing Items

Interfacing Items	Source / Destination
	3.2.1 Read Observed Sequence 3.2.2 Read Stored Behavior Sequences 3.2.3 Build Production Matrix 3.2.4 Build Cost Matrix 3.2.5 Calculate Costs
Environment Map Data	Input To: 3.2 Analyze Behavior 3.2.5 Calculate Costs Output From: 3.1 Read Contact Data Files
Process Signals/Sensor Data.NAE.07	Input To: 3.1 Read Contact Data Files Triggers Function(s): 1.3 Collect Video Data 2.0 Track 2.1 Read Video Data 2.2 Process Video Data Output From: 1.2 Determine Contact Presence
Stored Behavior Files	Input To: 3.2 Analyze Behavior 3.2.2 Read Stored Behavior Sequences Output From: 3.1 Read Contact Data Files 3.2.1 Read Observed Sequence
Target Track Data	Input To: 3.0 Classify (Conduct Behavior Analysis) 3.1 Read Contact Data Files Output From: 2.0 Track 2.3 Build Contact Track
Target Track Files	Input To: 3.2 Analyze Behavior 3.2.1 Read Observed Sequence Output From: 3.1 Read Contact Data Files

3.1.1 Feature Extraction.NAE.07

Description:
Given parametric data, estimate the characteristics of a target (e.g., length, RCS, track behavior pattern).

Duration: Normal (μ: 10.0, stdDev: 1.0, stream: 1)

Allocated To:
P Electrical Power
S.1 MATLAB

Source Document(s):
RDA CHSENG.NAE.07

3.2 Analyze Behavior

Description:
All of the fused track data is processed through the BAM and compared to its many friendly, neutral, and threat behavior models, where it is statistically analyzed, looking for anomalous behavior.

Allocated To:
B.1 BAM Behavior Analyzer
HW.1 Mac Server
P Electrical Power
S.1 MATLAB

Source Document(s):
BAM DRM

Based On:
MDA.4.1 MDA-004C-001T -Create a baseline of normal maritime behavior for an area or conditions of interest
MDA.4.2 MDA-004C-002T- Identify adversary patterns of behavior
MDA.4.3 MDA-004C-003T - Differentiate maritime threats from valid maritime commerce

Table 14 3.2 Analyze Behavior Interfacing Items

Interfacing Items	Source / Destination
Analysis Request	Triggers Function(s): 3.0 Classify (Conduct Behavior Analysis) 3.1 Read Contact Data Files 3.2 Analyze Behavior 3.2.1 Read Observed Sequence 3.2.2 Read Stored Behavior Sequences 3.2.3 Build Production Matrix 3.2.4 Build Cost Matrix 3.2.5 Calculate Costs
Behavior Cost Thresholds	Input To: 3.3 Perform Contact Classification

5 Functional Behavior Model

Table 14 3.2 Analyze Behavior Interfacing Items

Interfacing Items	Source / Destination
	3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown Output From: 3.2 Analyze Behavior 3.2.5 Calculate Costs
Cost Matrix Array	Input To: 3.2.5 Calculate Costs 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown Output From: 3.2 Analyze Behavior 3.2.4 Build Cost Matrix
Disseminated Intelligence.NAE.07	Input To: 0 Enhance Domain Awareness 3.0 Classify (Conduct Behavior Analysis) 3.2 Analyze Behavior 3.2.2 Read Stored Behavior Sequences 3.4.1 Perform Situational Analysis and Assessment
Environment Map Data	Input To: 3.2 Analyze Behavior 3.2.5 Calculate Costs Output From: 3.1 Read Contact Data Files
Mission Data [UUV-ITM-0001]	Input To: 0 Enhance Domain Awareness 3.0 Classify (Conduct Behavior Analysis) 3.2 Analyze Behavior 3.2.2 Read Stored Behavior Sequences 3.2.3 Build Production Matrix 3.4.1 Perform Situational Analysis and Assessment
Stored Behavior Files	Input To: 3.2 Analyze Behavior 3.2.2 Read Stored Behavior Sequences Output From: 3.1 Read Contact Data Files 3.2.1 Read Observed Sequence

5 Functional Behavior Model

Table 14 3.2 Analyze Behavior Interfacing Items

Interfacing Items	Source / Destination
Target Track Files	Input To: 3.2 Analyze Behavior 3.2.1 Read Observed Sequence Output From: 3.1 Read Contact Data Files
Threat Evaluation.NAE.07	Triggers Function(s): 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07 Output From: 3.2 Analyze Behavior 3.2.5 Calculate Costs 3.4.2 Evaluate Threat.NAE.07

Captures Resource(s):
R.1 Server Processor
Acquire Available: true
Amount: Normal (μ: 200.0, stdDev: 50.0, stream: 1)

5 Functional Behavior Model

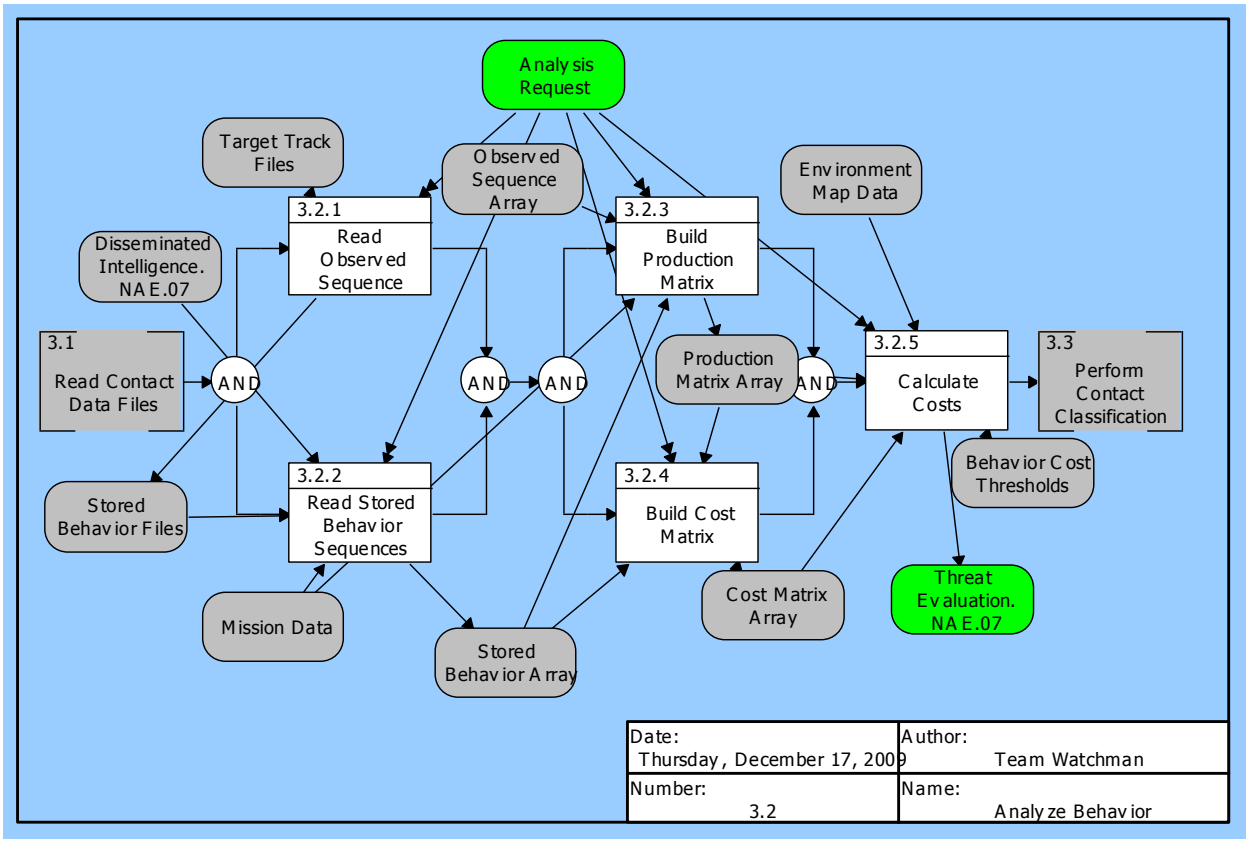

Figure 13 Analyze Behavior Enhanced FFBD

5 Functional Behavior Model

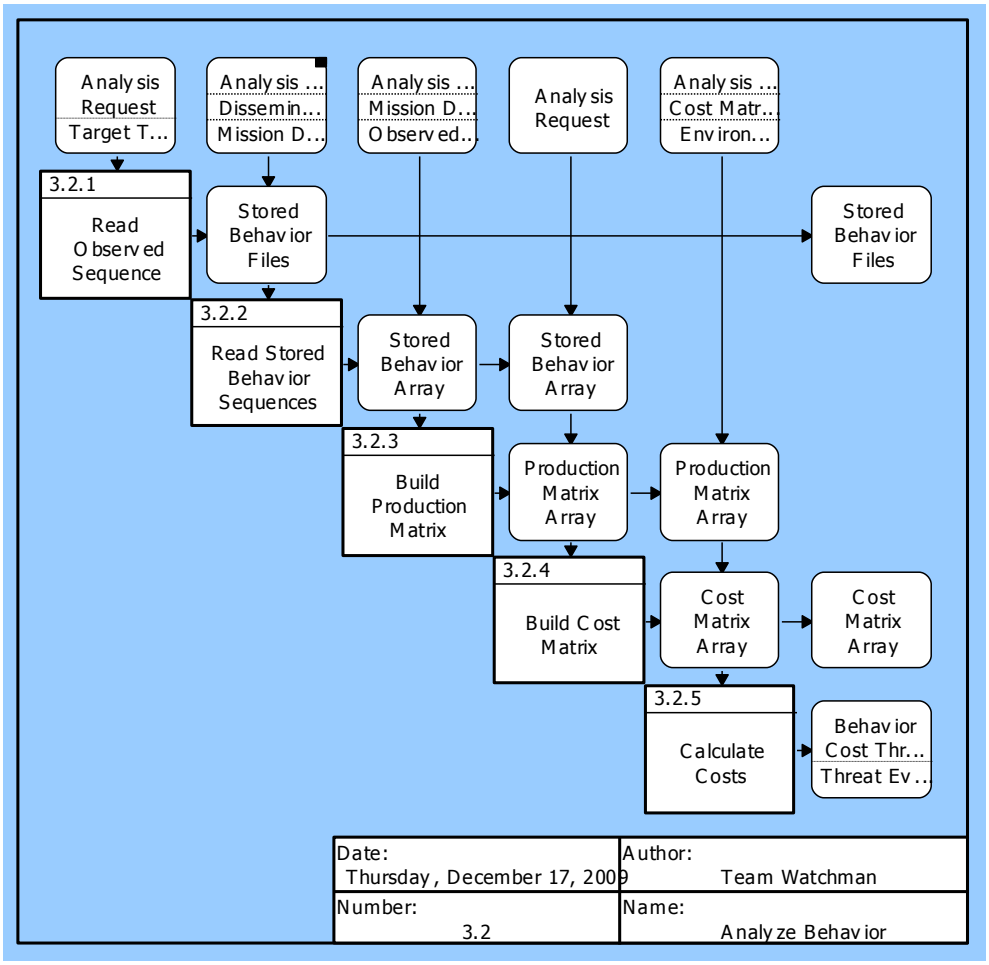

Figure 14 Analyze Behavior N2 Diagram

5 Functional Behavior Model

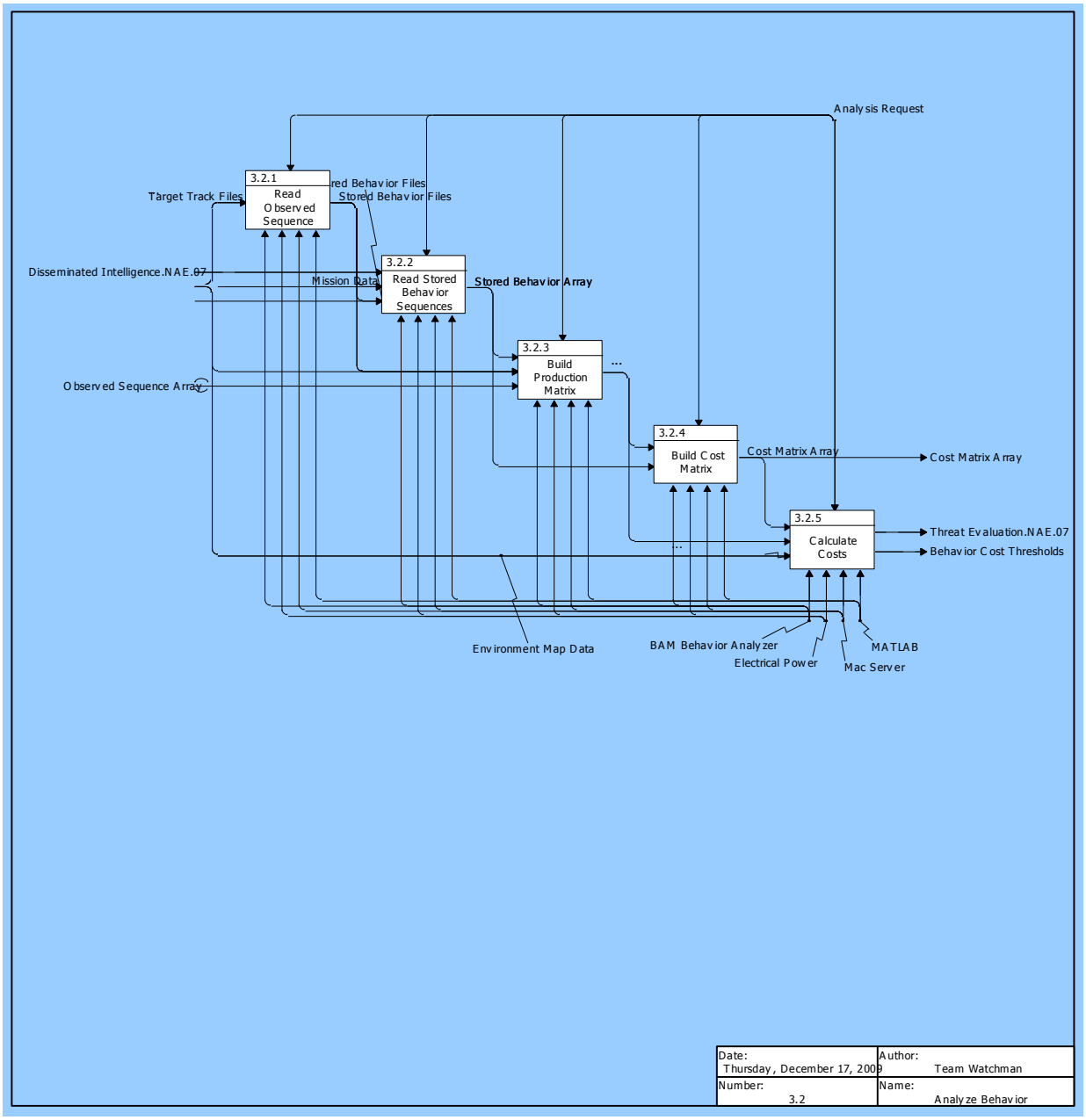

Figure 15 Analyze Behavior IDEF0 Diagram

3.2.1 Read Observed Sequence

Allocated To:

B.1 BAM Behavior Analyzer
HW.1 Mac Server
P Electrical Power
S.1 MATLAB

Table 15 3.2.1 Read Observed Sequence Interfacing Items

Interfacing Items	Source / Destination
Analysis Request	Triggers Function(s): 3.0 Classify (Conduct Behavior Analysis) 3.1 Read Contact Data Files 3.2 Analyze Behavior 3.2.1 Read Observed Sequence 3.2.2 Read Stored Behavior Sequences 3.2.3 Build Production Matrix 3.2.4 Build Cost Matrix 3.2.5 Calculate Costs
Stored Behavior Files	Input To: 3.2 Analyze Behavior 3.2.2 Read Stored Behavior Sequences Output From: 3.1 Read Contact Data Files 3.2.1 Read Observed Sequence
Target Track Files	Input To: 3.2 Analyze Behavior 3.2.1 Read Observed Sequence Output From: 3.1 Read Contact Data Files

3.2.2 Read Stored Behavior Sequences

Allocated To:
- B.1 BAM Behavior Analyzer
- HW.1 Mac Server
- P Electrical Power
- S.1 MATLAB

Table 16 3.2.2 Read Stored Behavior Sequences Interfacing Items

Interfacing Items	Source / Destination
Analysis Request	Triggers Function(s): 3.0 Classify (Conduct Behavior Analysis) 3.1 Read Contact Data Files 3.2 Analyze Behavior 3.2.1 Read Observed Sequence 3.2.2 Read Stored Behavior Sequences 3.2.3 Build Production Matrix 3.2.4 Build Cost Matrix 3.2.5 Calculate Costs

Table 16 3.2.2 Read Stored Behavior Sequences Interfacing Items

Interfacing Items	Source / Destination
Disseminated Intelligence.NAE.07	Input To: 0 Enhance Domain Awareness 3.0 Classify (Conduct Behavior Analysis) 3.2 Analyze Behavior 3.2.2 Read Stored Behavior Sequences 3.4.1 Perform Situational Analysis and Assessment
Mission Data [UUV-ITM-0001]	Input To: 0 Enhance Domain Awareness 3.0 Classify (Conduct Behavior Analysis) 3.2 Analyze Behavior 3.2.2 Read Stored Behavior Sequences 3.2.3 Build Production Matrix 3.4.1 Perform Situational Analysis and Assessment
Stored Behavior Array	Input To: 3.2.3 Build Production Matrix 3.2.4 Build Cost Matrix Output From: 3.2.2 Read Stored Behavior Sequences
Stored Behavior Files	Input To: 3.2 Analyze Behavior 3.2.2 Read Stored Behavior Sequences Output From: 3.1 Read Contact Data Files 3.2.1 Read Observed Sequence

3.2.3 Build Production Matrix

Allocated To:
- B.1 BAM Behavior Analyzer
- HW.1 Mac Server
- P Electrical Power
- S.1 MATLAB

Table 17 3.2.3 Build Production Matrix Interfacing Items

Interfacing Items	Source / Destination
Analysis Request	Triggers Function(s): 3.0 Classify (Conduct Behavior Analysis) 3.1 Read Contact Data Files 3.2 Analyze Behavior

Table 17 3.2.3 Build Production Matrix Interfacing Items

Interfacing Items	Source / Destination
	3.2.1 Read Observed Sequence 3.2.2 Read Stored Behavior Sequences 3.2.3 Build Production Matrix 3.2.4 Build Cost Matrix 3.2.5 Calculate Costs
Mission Data [UUV-ITM-0001]	Input To: 0 Enhance Domain Awareness 3.0 Classify (Conduct Behavior Analysis) 3.2 Analyze Behavior 3.2.2 Read Stored Behavior Sequences 3.2.3 Build Production Matrix 3.4.1 Perform Situational Analysis and Assessment
Observed Sequence Array	Input To: 3.2.3 Build Production Matrix Output From: 3.3.1 Classify Normal
Production Matrix Array	Input To: 3.2.4 Build Cost Matrix 3.2.5 Calculate Costs Output From: 3.2.3 Build Production Matrix
Stored Behavior Array	Input To: 3.2.3 Build Production Matrix 3.2.4 Build Cost Matrix Output From: 3.2.2 Read Stored Behavior Sequences

3.2.4 Build Cost Matrix

Allocated To:
- B.1 BAM Behavior Analyzer
- HW.1 Mac Server
- P Electrical Power
- S.1 MATLAB

Table 18 3.2.4 Build Cost Matrix Interfacing Items

Interfacing Items	Source / Destination
Analysis Request	Triggers Function(s): 3.0 Classify (Conduct Behavior Analysis)

Table 18 3.2.4 Build Cost Matrix Interfacing Items

Interfacing Items	Source / Destination
	3.1 Read Contact Data Files 3.2 Analyze Behavior 3.2.1 Read Observed Sequence 3.2.2 Read Stored Behavior Sequences 3.2.3 Build Production Matrix 3.2.4 Build Cost Matrix 3.2.5 Calculate Costs
Cost Matrix Array	Input To: 3.2.5 Calculate Costs 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown Output From: 3.2 Analyze Behavior 3.2.4 Build Cost Matrix
Production Matrix Array	Input To: 3.2.4 Build Cost Matrix 3.2.5 Calculate Costs Output From: 3.2.3 Build Production Matrix
Stored Behavior Array	Input To: 3.2.3 Build Production Matrix 3.2.4 Build Cost Matrix Output From: 3.2.2 Read Stored Behavior Sequences

3.2.5 Calculate Costs

Allocated To:
- B.1 BAM Behavior Analyzer
- HW.1 Mac Server
- P Electrical Power
- S.1 MATLAB

Table 19 3.2.5 Calculate Costs Interfacing Items

Interfacing Items	Source / Destination
Analysis Request	Triggers Function(s): 3.0 Classify (Conduct Behavior Analysis)

5 Functional Behavior Model

Table 19 3.2.5 Calculate Costs Interfacing Items

Interfacing Items	Source / Destination
	3.1 Read Contact Data Files 3.2 Analyze Behavior 3.2.1 Read Observed Sequence 3.2.2 Read Stored Behavior Sequences 3.2.3 Build Production Matrix 3.2.4 Build Cost Matrix 3.2.5 Calculate Costs
Behavior Cost Thresholds	Input To: 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown Output From: 3.2 Analyze Behavior 3.2.5 Calculate Costs
Cost Matrix Array	Input To: 3.2.5 Calculate Costs 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown Output From: 3.2 Analyze Behavior 3.2.4 Build Cost Matrix
Environment Map Data	Input To: 3.2 Analyze Behavior 3.2.5 Calculate Costs Output From: 3.1 Read Contact Data Files
Production Matrix Array	Input To: 3.2.4 Build Cost Matrix 3.2.5 Calculate Costs Output From: 3.2.3 Build Production Matrix
Threat Evaluation.NAE.07	Triggers Function(s): 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown

Table 19 3.2.5 Calculate Costs Interfacing Items

Interfacing Items	Source / Destination
	3.4 Perform I&W 3.4.3 Alert Generation.NAE.07 Output From: 3.2 Analyze Behavior 3.2.5 Calculate Costs 3.4.2 Evaluate Threat.NAE.07

3.3 Perform Contact Classification

Duration: 20.0

Allocated To:
HW.1 Mac Server
P Electrical Power
S.1 MATLAB

Based On:
MDA.3 MDA-003C - The capability to aggregate, display, and analyze maritime information in order to understand the maritime environment and identify threats

Table 20 3.3 Perform Contact Classification Interfacing Items

Interfacing Items	Source / Destination
Assign Track Category.NAE.07	Input To: 3.4 Perform I&W 3.4.1 Perform Situational Analysis and Assessment Output From: 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown
Behavior Cost Thresholds	Input To: 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown Output From: 3.2 Analyze Behavior 3.2.5 Calculate Costs
Cost Matrix Array	Input To: 3.2.5 Calculate Costs 3.3 Perform Contact Classification

5 Functional Behavior Model

Table 20 3.3 Perform Contact Classification Interfacing Items

Interfacing Items	Source / Destination
	3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown Output From: 3.2 Analyze Behavior 3.2.4 Build Cost Matrix
Threat Evaluation.NAE.07	Triggers Function(s): 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07 Output From: 3.2 Analyze Behavior 3.2.5 Calculate Costs 3.4.2 Evaluate Threat.NAE.07
Track confirmed to be Target of Interest.NAE.07	Triggers Function(s): 3.4 Perform I&W 3.4.1 Perform Situational Analysis and Assessment Output From: 3.3 Perform Contact Classification 3.3.2 Classify Abnormal 3.3.3 Classify Unknown

Captures Resource(s):
R.1 Server Processor
Acquire Available: true
Amount: Normal (μ: 100.0, stdDev: 25.0, stream: 1)

5 Functional Behavior Model

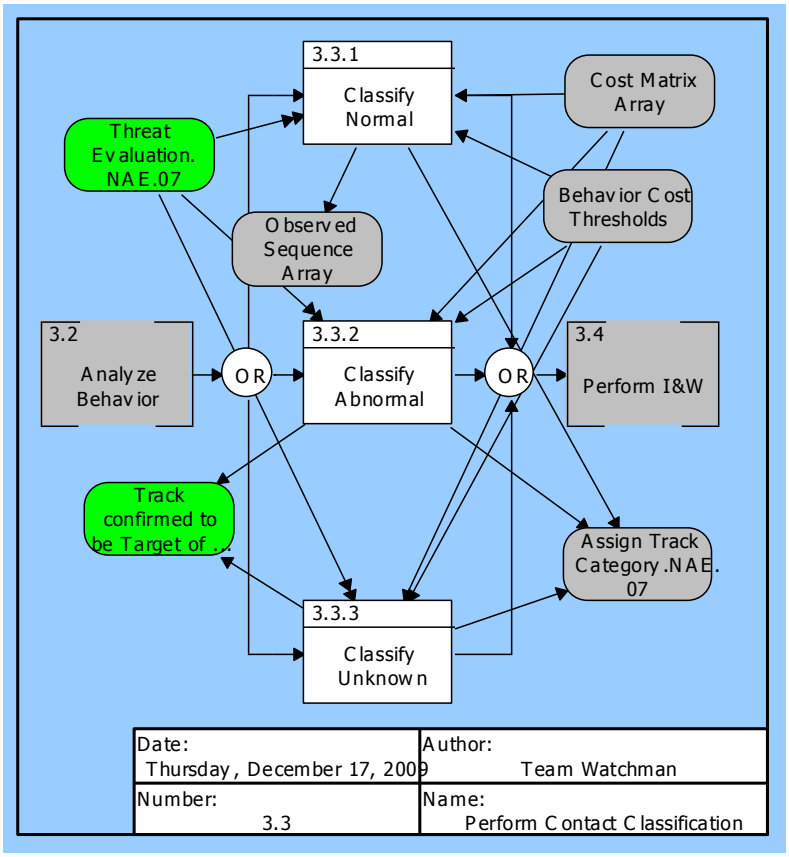

Figure 16 Perform Contact Classification Enhanced FFBD

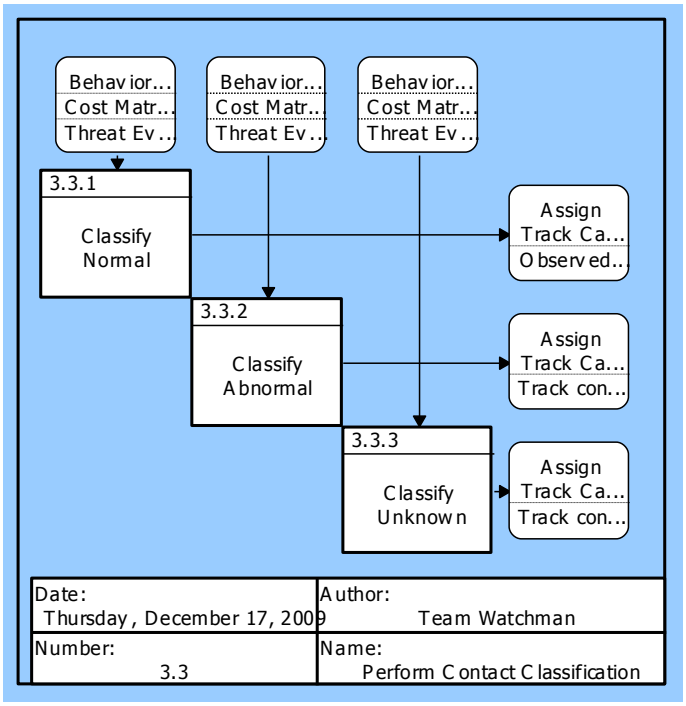

Figure 17 Perform Contact Classification N2 Diagram

5 Functional Behavior Model

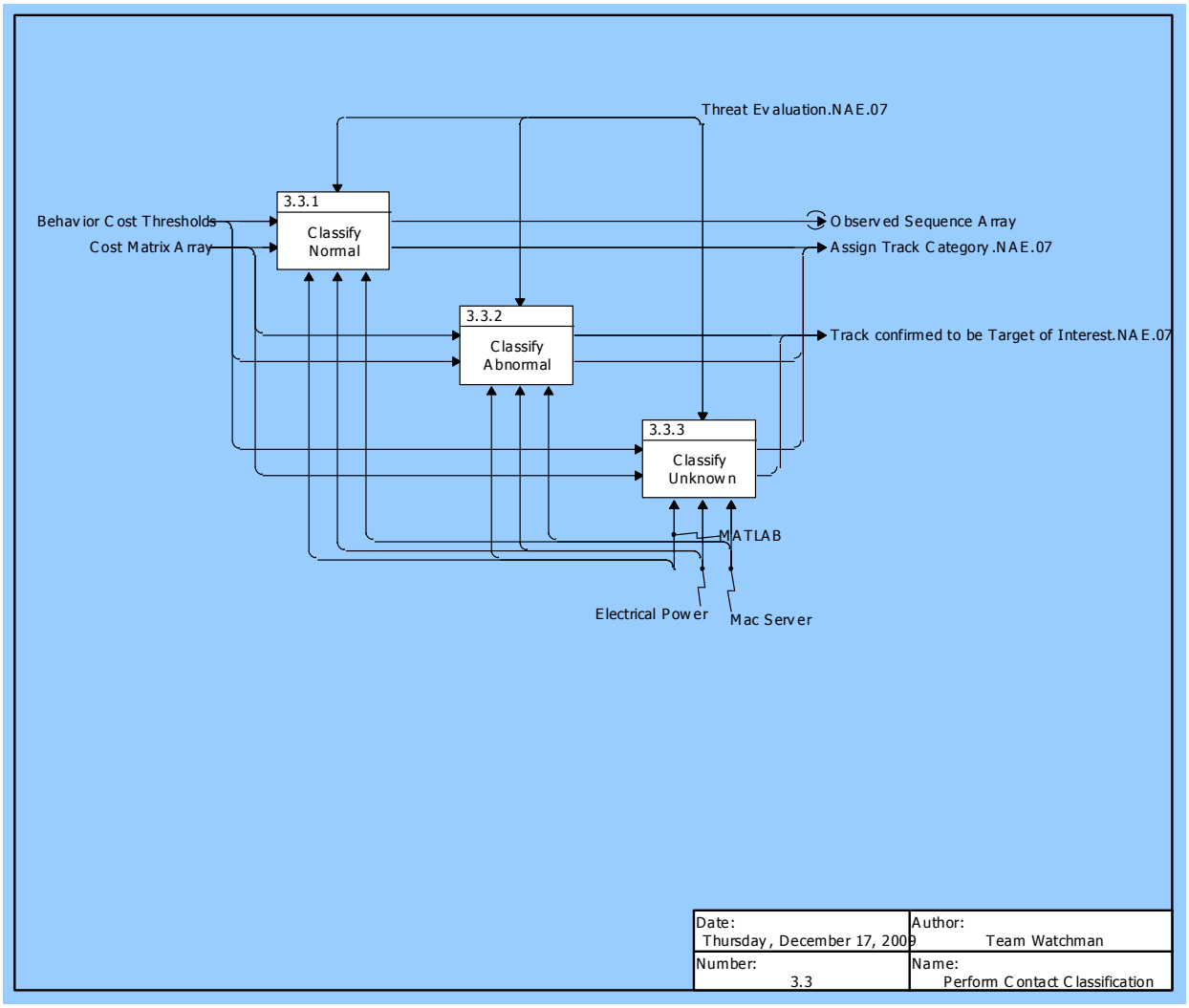

Figure 18 Perform Contact Classification IDEF0 Diagram

3.3.1 Classify Normal

Duration: 15.0

Allocated To:

HW.1 Mac Server
P Electrical Power
S.1 MATLAB

Based On:

MDA.3 MDA-003C - The capability to aggregate, display, and analyze maritime information in order to understand the maritime environment and identify threats

5 Functional Behavior Model

Table 21 3.3.1 Classify Normal Interfacing Items

Interfacing Items	Source / Destination
Assign Track Category.NAE.07	Input To: 3.4 Perform I&W 3.4.1 Perform Situational Analysis and Assessment Output From: 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown
Behavior Cost Thresholds	Input To: 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown Output From: 3.2 Analyze Behavior 3.2.5 Calculate Costs
Cost Matrix Array	Input To: 3.2.5 Calculate Costs 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown Output From: 3.2 Analyze Behavior 3.2.4 Build Cost Matrix
Observed Sequence Array	Input To: 3.2.3 Build Production Matrix Output From: 3.3.1 Classify Normal
Threat Evaluation.NAE.07	Triggers Function(s): 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07 Output From: 3.2 Analyze Behavior 3.2.5 Calculate Costs

Table 21 3.3.1 Classify Normal Interfacing Items

Interfacing Items	Source / Destination
	3.4.2 Evaluate Threat.NAE.07

Captures Resource(s):
R.1 Server Processor
Acquire Available: true
Amount: Normal (μ: 100.0, stdDev: 25.0, stream: 1)

3.3.2 Classify Abnormal

Allocated To:
HW.1 Mac Server
P Electrical Power
S.1 MATLAB

Table 22 3.3.2 Classify Abnormal Interfacing Items

Interfacing Items	Source / Destination
Assign Track Category.NAE.07	Input To: 3.4 Perform I&W 3.4.1 Perform Situational Analysis and Assessment Output From: 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown
Behavior Cost Thresholds	Input To: 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown Output From: 3.2 Analyze Behavior 3.2.5 Calculate Costs
Cost Matrix Array	Input To: 3.2.5 Calculate Costs 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown Output From: 3.2 Analyze Behavior 3.2.4 Build Cost Matrix

Table 22 3.3.2 Classify Abnormal Interfacing Items

Interfacing Items	Source / Destination
Threat Evaluation.NAE.07	Triggers Function(s): 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07 Output From: 3.2 Analyze Behavior 3.2.5 Calculate Costs 3.4.2 Evaluate Threat.NAE.07
Track confirmed to be Target of Interest.NAE.07	Triggers Function(s): 3.4 Perform I&W 3.4.1 Perform Situational Analysis and Assessment Output From: 3.3 Perform Contact Classification 3.3.2 Classify Abnormal 3.3.3 Classify Unknown

3.3.3 Classify Unknown

Allocated To:
HW.1 Mac Server
P Electrical Power
S.1 MATLAB

Table 23 3.3.3 Classify Unknown Interfacing Items

Interfacing Items	Source / Destination
Assign Track Category.NAE.07	Input To: 3.4 Perform I&W 3.4.1 Perform Situational Analysis and Assessment Output From: 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown
Behavior Cost Thresholds	Input To: 3.3 Perform Contact Classification 3.3.1 Classify Normal

5 Functional Behavior Model

Table 23 3.3.3 Classify Unknown Interfacing Items

Interfacing Items	Source / Destination
	3.3.2 Classify Abnormal 3.3.3 Classify Unknown Output From: 3.2 Analyze Behavior 3.2.5 Calculate Costs
Cost Matrix Array	Input To: 3.2.5 Calculate Costs 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown Output From: 3.2 Analyze Behavior 3.2.4 Build Cost Matrix
Threat Evaluation.NAE.07	Triggers Function(s): 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07 Output From: 3.2 Analyze Behavior 3.2.5 Calculate Costs 3.4.2 Evaluate Threat.NAE.07
Track confirmed to be Target of Interest.NAE.07	Triggers Function(s): 3.4 Perform I&W 3.4.1 Perform Situational Analysis and Assessment Output From: 3.3 Perform Contact Classification 3.3.2 Classify Abnormal 3.3.3 Classify Unknown

3.4 Perform I&W

Duration: Normal (μ: 20.0, stdDev: 2.0, stream: 1)

Allocated To:
HW.1 Mac Server
HW.2 Mac Cinema Displays

P Electrical Power
S.1 MATLAB
S.3 MS ACCESS
S.4 MS SQL SERVER

Based On:
MDA.4 MDA-004C - The capability to predict activity within the maritime domain

Table 24 3.4 Perform I&W Interfacing Items

Interfacing Items	Source / Destination
Alert Message.NAE.07	Triggers Function(s): 4.0 Respond 4.1 Task WSSN 4.1.1 Receive WSSN Tasking Order Data from Watchman Server Output From: 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07
Assign Track Category.NAE.07	Input To: 3.4 Perform I&W 3.4.1 Perform Situational Analysis and Assessment Output From: 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown
Requested Information.NAE.07	Output From: 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07
Threat Evaluation.NAE.07	Triggers Function(s): 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07 Output From: 3.2 Analyze Behavior 3.2.5 Calculate Costs 3.4.2 Evaluate Threat.NAE.07
Track confirmed to be Target of Interest.NAE.07	Triggers Function(s):

5 Functional Behavior Model

Table 24 3.4 Perform I&W Interfacing Items

Interfacing Items	Source / Destination
	3.4 Perform I&W 3.4.1 Perform Situational Analysis and Assessment Output From: 3.3 Perform Contact Classification 3.3.2 Classify Abnormal 3.3.3 Classify Unknown
User Commands	Input To: 0 Enhance Domain Awareness 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07 O.4 Perform User Interface Functions
User Requests for Data	Input To: 0 Enhance Domain Awareness 1.0 Detect 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.2 Evaluate Threat.NAE.07 O.4 Perform User Interface Functions Triggers Function(s): 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data

Captures Resource(s):
R.1 Server Processor
Acquire Available: true
Amount: Normal (μ: 100.0, stdDev: 20.0, stream: 1)

5 Functional Behavior Model

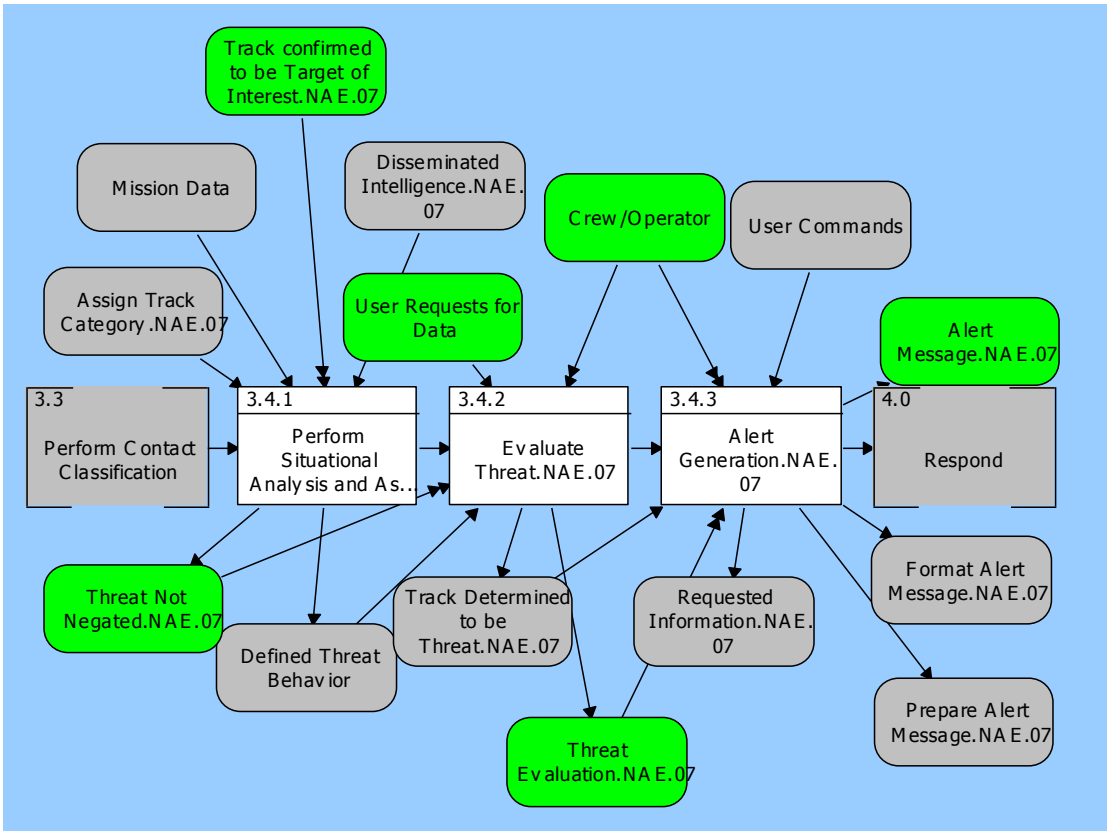

Figure 19 Perform I&W Enhanced FFBD

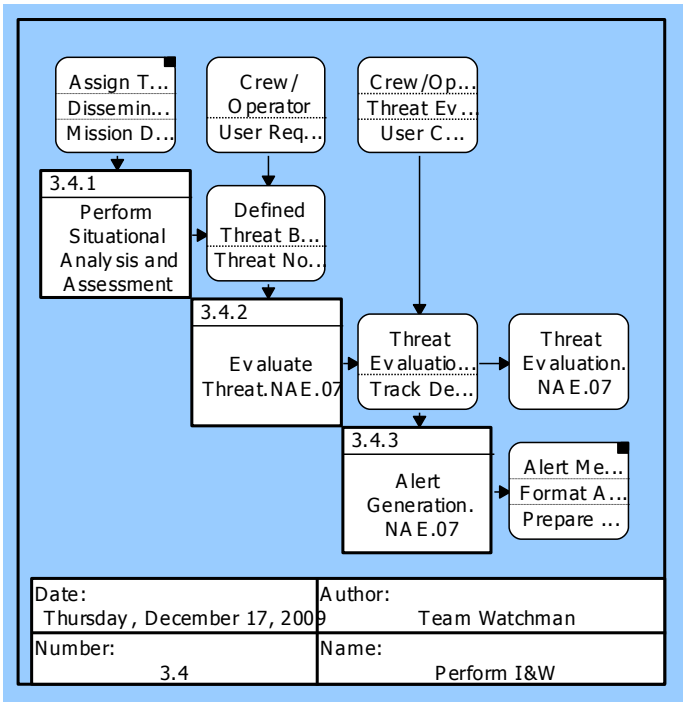

Figure 20 Perform I&W N2 Diagram

5 Functional Behavior Model

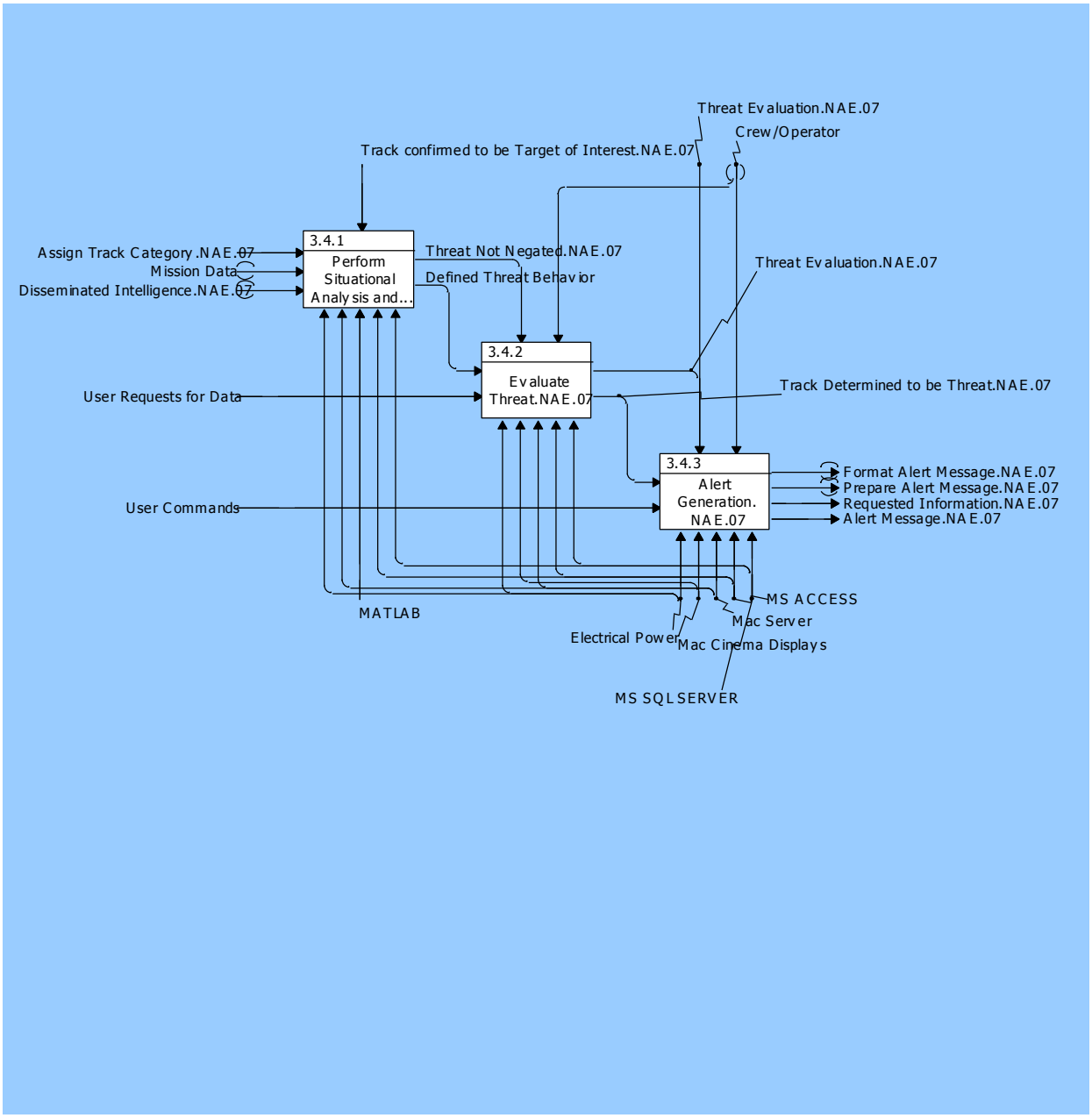

Figure 21 Perform I&W IDEF0 Diagram

3.4.1 Perform Situational Analysis and Assessment

Duration: Normal (μ: 100.0, stdDev: 10.0, stream: 1)

Allocated To:

HW.1 Mac Server
P Electrical Power
S.1 MATLAB
S.3 MS ACCESS

S.4 MS SQL SERVER

Based On:

MDA.3 MDA-003C - The capability to aggregate, display, and analyze maritime information in order to understand the maritime environment and identify threats

MDA.4 MDA-004C - The capability to predict activity within the maritime domain

Table 25 3.4.1 Perform Situational Analysis and Assessment Interfacing Items

Interfacing Items	Source / Destination
Assign Track Category.NAE.07	Input To: 3.4 Perform I&W 3.4.1 Perform Situational Analysis and Assessment Output From: 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown
Defined Threat Behavior	Input To: 3.4.2 Evaluate Threat.NAE.07 Output From: 3.4.1 Perform Situational Analysis and Assessment
Disseminated Intelligence.NAE.07	Input To: 0 Enhance Domain Awareness 3.0 Classify (Conduct Behavior Analysis) 3.2 Analyze Behavior 3.2.2 Read Stored Behavior Sequences 3.4.1 Perform Situational Analysis and Assessment
Mission Data [UUV-ITM-0001]	Input To: 0 Enhance Domain Awareness 3.0 Classify (Conduct Behavior Analysis) 3.2 Analyze Behavior 3.2.2 Read Stored Behavior Sequences 3.2.3 Build Production Matrix 3.4.1 Perform Situational Analysis and Assessment
Threat Not Negated.NAE.07	Triggers Function(s): 3.4.2 Evaluate Threat.NAE.07 Output From: 3.4.1 Perform Situational Analysis and Assessment
Track confirmed to be Target of Interest.NAE.07	Triggers Function(s): 3.4 Perform I&W 3.4.1 Perform Situational Analysis and Assessment Output From:

Table 25 3.4.1 Perform Situational Analysis and Assessment Interfacing Items

Interfacing Items	Source / Destination
	3.3 Perform Contact Classification 3.3.2 Classify Abnormal 3.3.3 Classify Unknown

Captures Resource(s):
R.1 Server Processor
Acquire Available: true
Amount: Normal (μ: 250.0, stdDev: 50.0, stream: 1)

3.4.2 Evaluate Threat.NAE.07

Description:
Given the latest intelligence (threat) information, evaluate the information concerning location and capability of enemy forces to plan the safest routes for mission completion.

Duration: Normal (μ: 10.0, stdDev: 1.0, stream: 1)

Allocated To:
HW.1 Mac Server
HW.2 Mac Cinema Displays
P Electrical Power
S.3 MS ACCESS
S.4 MS SQL SERVER

Source Document(s):
SPAWAR.NAE.07

Based On:
MDA.3 MDA-003C - The capability to aggregate, display, and analyze maritime information in order to understand the maritime environment and identify threats
MDA.4 MDA-004C - The capability to predict activity within the maritime domain

Table 26 3.4.2 Evaluate Threat.NAE.07 Interfacing Items

Interfacing Items	Source / Destination
Crew/Operator	Triggers Function(s): 0 Enhance Domain Awareness 1.5 Manage Video Collection 3.4.2 Evaluate Threat.NAE.07 3.4.3 Alert Generation.NAE.07 O Perform Overhead Functions [UUV-FCN-0020] O.4 Perform User Interface Functions
Defined Threat Behavior	Input To: 3.4.2 Evaluate Threat.NAE.07 Output From: 3.4.1 Perform Situational Analysis and Assessment

Table 26 3.4.2 Evaluate Threat.NAE.07 Interfacing Items

Interfacing Items	Source / Destination
Threat Evaluation.NAE.07	Triggers Function(s): 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07 Output From: 3.2 Analyze Behavior 3.2.5 Calculate Costs 3.4.2 Evaluate Threat.NAE.07
Threat Not Negated.NAE.07	Triggers Function(s): 3.4.2 Evaluate Threat.NAE.07 Output From: 3.4.1 Perform Situational Analysis and Assessment
Track Determined to be Threat.NAE.07	Input To: 3.4.3 Alert Generation.NAE.07 Output From: 3.4.2 Evaluate Threat.NAE.07
User Requests for Data	Input To: 0 Enhance Domain Awareness 1.0 Detect 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.2 Evaluate Threat.NAE.07 O.4 Perform User Interface Functions Triggers Function(s): 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data

Captures Resource(s):
R.1 Server Processor
Acquire Available: true
Amount: Normal (μ: 100.0, stdDev: 15.0, stream: 1)

3.4.3 Alert Generation.NAE.07

Description:
Given new information of user or system defined importance, generate a visual or audible warning to indicate the presence of information.

Duration: Normal (μ: 10.0, stdDev: 1.0, stream: 1)

Allocated To:
HW.1 Mac Server
HW.2 Mac Cinema Displays
P Electrical Power
S.3 MS ACCESS
S.4 MS SQL SERVER

Source Document(s):
RDA CHSENG.NAE.07

Based On:
MDA.4 MDA-004C - The capability to predict activity within the maritime domain

Table 27 3.4.3 Alert Generation.NAE.07 Interfacing Items

Interfacing Items	Source / Destination
Alert Message.NAE.07	Triggers Function(s): 4.0 Respond 4.1 Task WSSN 4.1.1 Receive WSSN Tasking Order Data from Watchman Server Output From: 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07
Crew/Operator	Triggers Function(s): 0 Enhance Domain Awareness 1.5 Manage Video Collection 3.4.2 Evaluate Threat.NAE.07 3.4.3 Alert Generation.NAE.07 O Perform Overhead Functions [UUV-FCN-0020] O.4 Perform User Interface Functions
Format Alert Message.NAE.07	Output From: 3.4.3 Alert Generation.NAE.07
Prepare Alert Message.NAE.07	Output From: 3.4.3 Alert Generation.NAE.07
Requested Information.NAE.07	Output From: 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W

Table 27 3.4.3 Alert Generation.NAE.07 Interfacing Items

Interfacing Items	Source / Destination
	3.4.3 Alert Generation.NAE.07
Threat Evaluation.NAE.07	Triggers Function(s): 3.3 Perform Contact Classification 3.3.1 Classify Normal 3.3.2 Classify Abnormal 3.3.3 Classify Unknown 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07 Output From: 3.2 Analyze Behavior 3.2.5 Calculate Costs 3.4.2 Evaluate Threat.NAE.07
Track Determined to be Threat.NAE.07	Input To: 3.4.3 Alert Generation.NAE.07 Output From: 3.4.2 Evaluate Threat.NAE.07
User Commands	Input To: 0 Enhance Domain Awareness 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07 O.4 Perform User Interface Functions

Captures Resource(s):
R.1 Server Processor
Acquire Available: true
Amount: 10.0

4.0 Respond

Allocated To:
P Electrical Power
S.2 WSSN Agent

Based On:
NCOE JIC 6.0 Ability to Create/Produce Information in an Assured Environment

Table 28 4.0 Respond Interfacing Items

Interfacing Items	Source / Destination
Alert Message.NAE.07	Triggers Function(s):

5 Functional Behavior Model

Table 28 4.0 Respond Interfacing Items

Interfacing Items	Source / Destination
	4.0 Respond 4.1 Task WSSN 4.1.1 Receive WSSN Tasking Order Data from Watchman Server Output From: 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07
WSSN Task Order Response Data	Input To: Ext.1 Analyze WSSN Tasking Order Response Data Output From: 4.0 Respond 4.4 Respond to WSSN Tasking Order 4.4.4 Process WSSN Tasking Order Response
WSSN Tasking Order Data	Input To: 4.0 Respond 4.1 Task WSSN 4.1.2 Generate WSSN Tasking Order 4.1.3 Send WSSN Tasking Order to WSSN Output From: 3.0 Classify (Conduct Behavior Analysis)

5 Functional Behavior Model

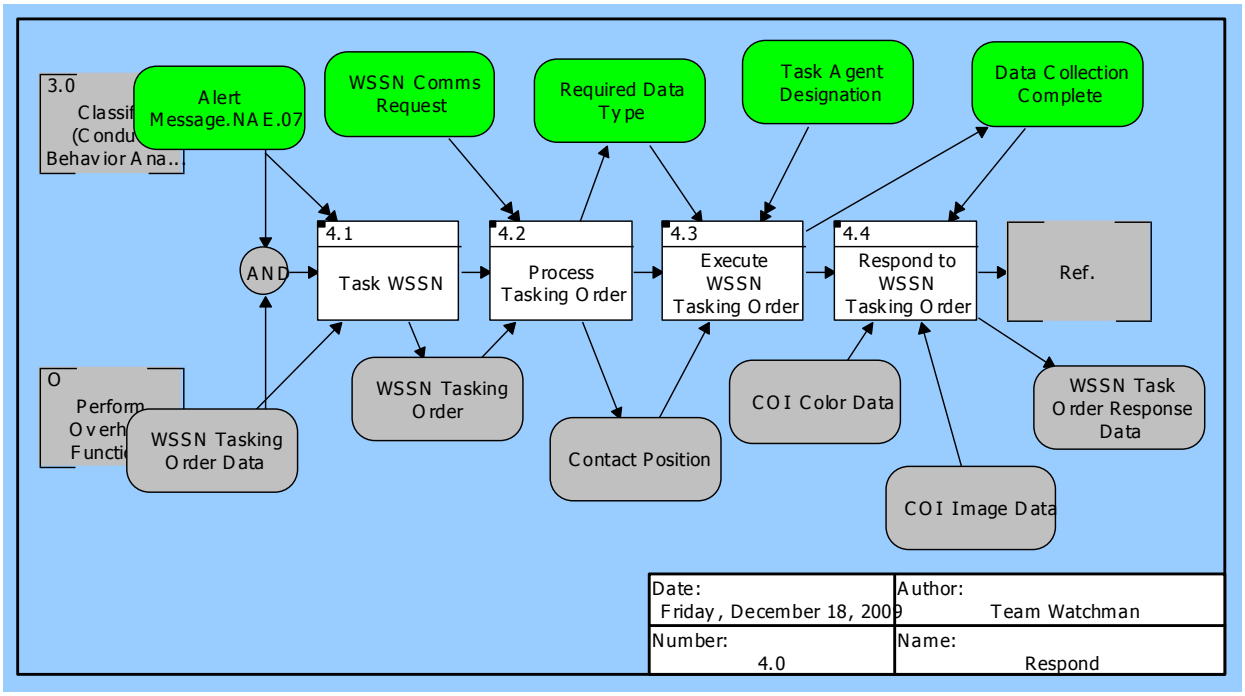

Figure 22 Respond Enhanced FFBD

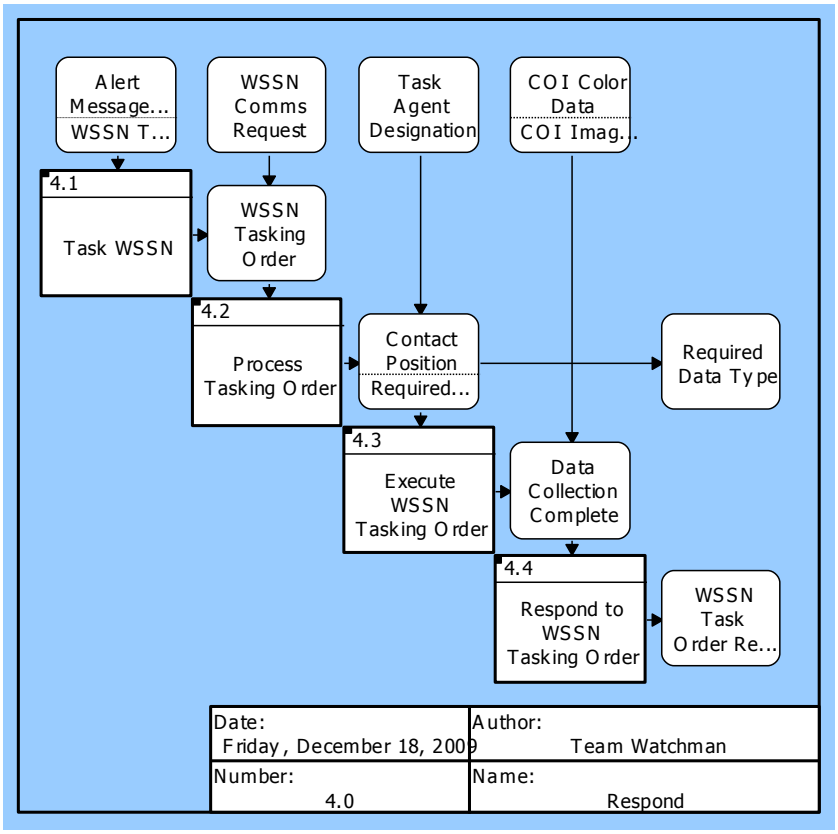

Figure 23 Respond N2 Diagram

5 Functional Behavior Model

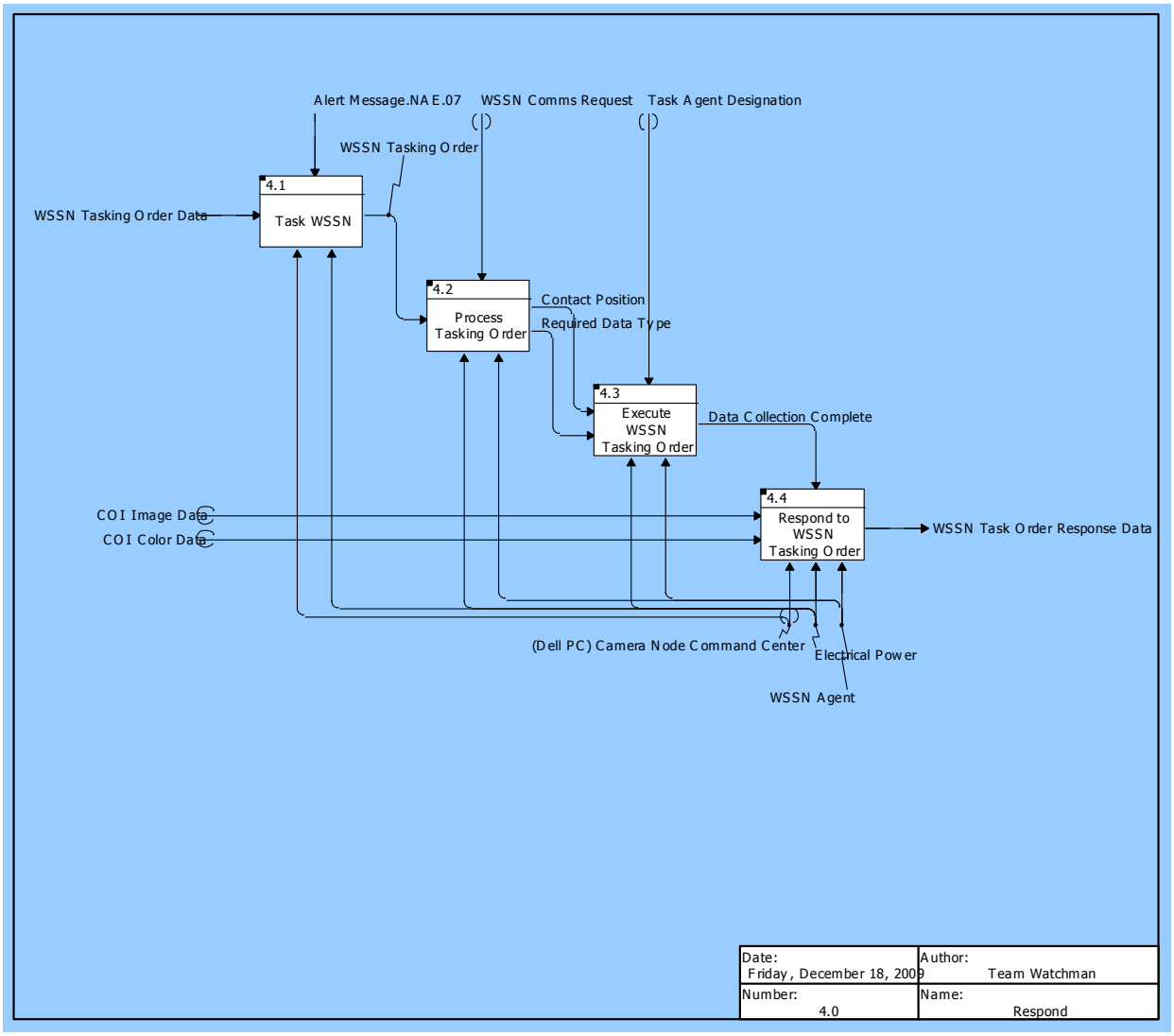

Figure 24 Respond IDEF0 Diagram

4.1 Task WSSN

Allocated To:

HW.3 (Dell PC) Camera Node Command Center

P Electrical Power

Based On:

NCOE JIC 6.1 Provide Smart Management of Collection Assets

Table 29 4.1 Task WSSN Interfacing Items

Interfacing Items	Source / Destination
Alert Message.NAE.07	Triggers Function(s): 4.0 Respond

5 Functional Behavior Model

Table 29 4.1 Task WSSN Interfacing Items

Interfacing Items	Source / Destination
	4.1 Task WSSN 4.1.1 Receive WSSN Tasking Order Data from Watchman Server Output From: 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07
WSSN Tasking Order	Input To: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2 Output From: 4.1 Task WSSN 4.1.3 Send WSSN Tasking Order to WSSN
WSSN Tasking Order Data	Input To: 4.0 Respond 4.1 Task WSSN 4.1.2 Generate WSSN Tasking Order 4.1.3 Send WSSN Tasking Order to WSSN Output From: 3.0 Classify (Conduct Behavior Analysis)

Consumes Resource(s):
R.3 WSSN Processor
Acquire Available: true
Amount: Normal (μ: 750.0, stdDev: 150.0, stream: 1)

5 Functional Behavior Model

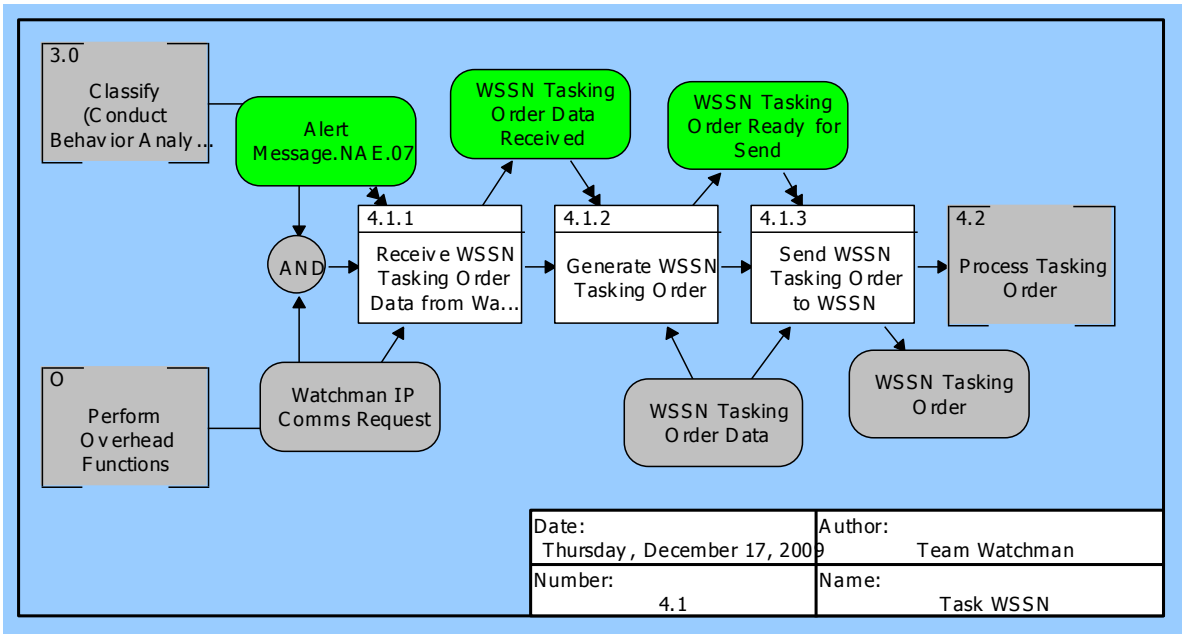

Figure 25 Task WSSN Enhanced FFBD

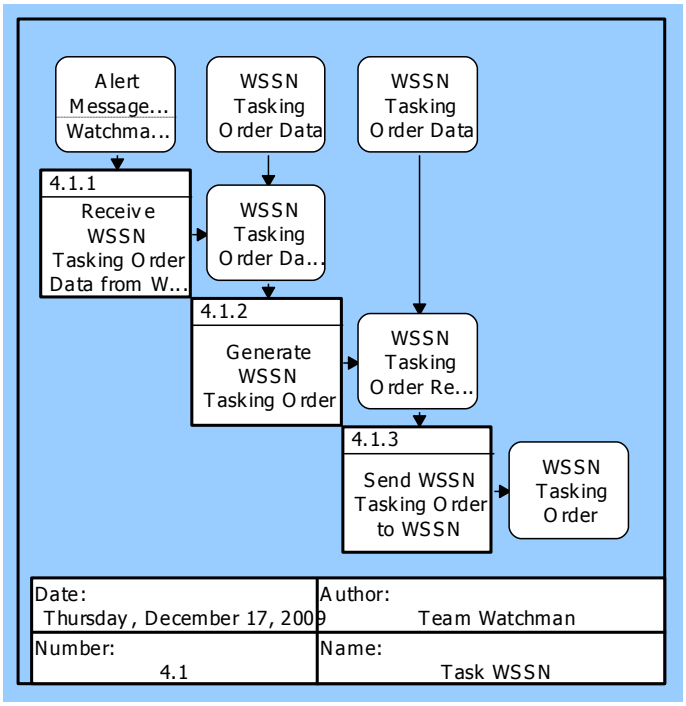

Figure 26 Task WSSN N2 Diagram

5 Functional Behavior Model

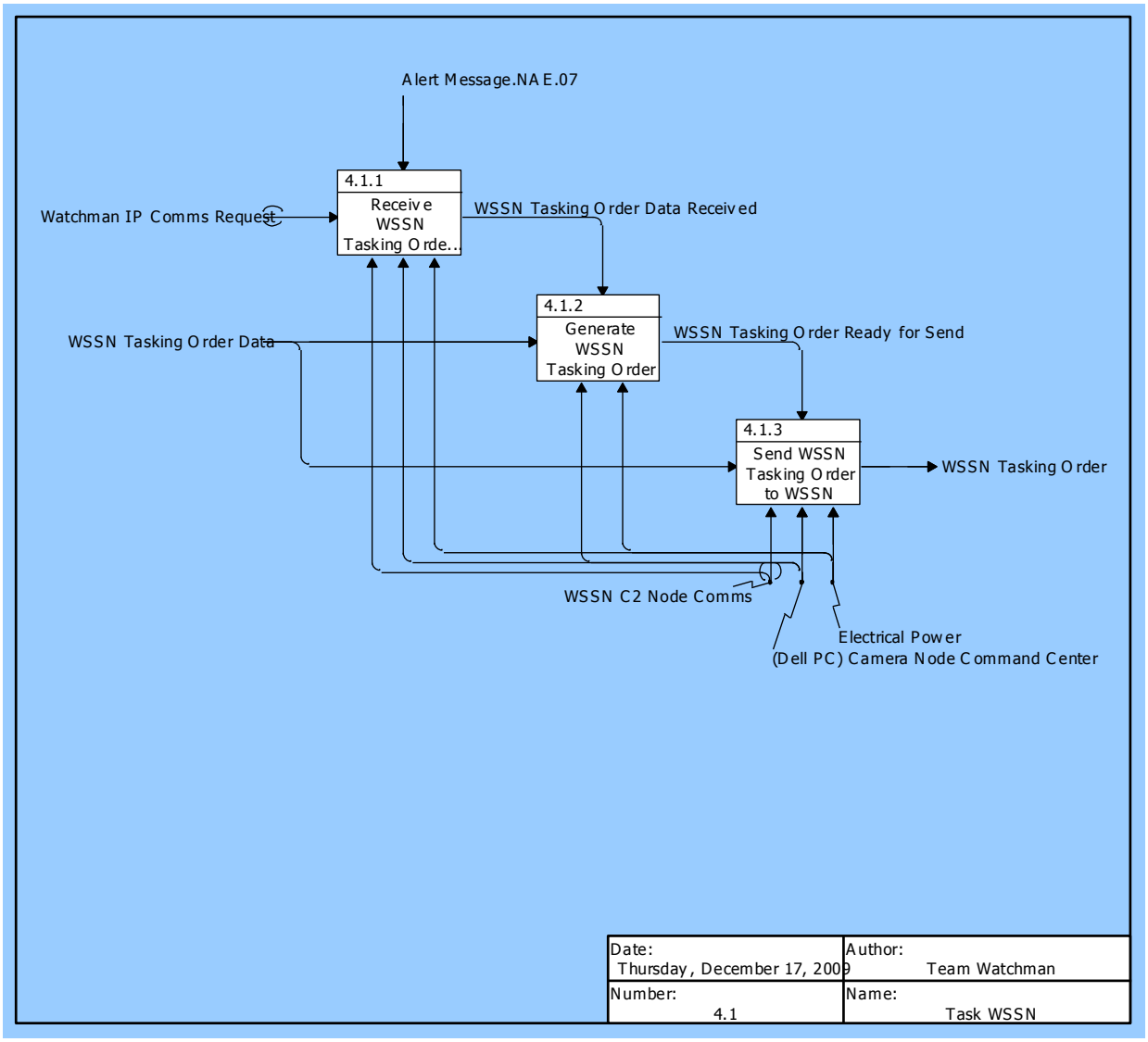

Figure 27 Task WSSN IDEF0 Diagram

4.1.1 Receive WSSN Tasking Order Data from Watchman Server

Allocated To:

HW.3 (Dell PC) Camera Node Command Center
P Electrical Power
S.1.2 WSSN C2 Node Comms

Table 30 4.1.1 Receive WSSN Tasking Order Data from Watchman Server Interfacing Items

Interfacing Items	Source / Destination
Alert Message.NAE.07	Triggers Function(s): 4.0 Respond 4.1 Task WSSN 4.1.1 Receive WSSN Tasking Order Data from

Table 30 4.1.1 Receive WSSN Tasking Order Data from Watchman Server Interfacing Items

Interfacing Items	Source / Destination
	Watchman Server Output From: 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07
Watchman IP Comms Request	Input To: 4.1.1 Receive WSSN Tasking Order Data from Watchman Server
WSSN Tasking Order Data Received	Triggers Function(s): 4.1.2 Generate WSSN Tasking Order Output From: 4.1.1 Receive WSSN Tasking Order Data from Watchman Server

4.1.2 Generate WSSN Tasking Order

Allocated To:
HW.3 (Dell PC) Camera Node Command Center
P Electrical Power

Table 31 4.1.2 Generate WSSN Tasking Order Interfacing Items

Interfacing Items	Source / Destination
WSSN Tasking Order Data	Input To: 4.0 Respond 4.1 Task WSSN 4.1.2 Generate WSSN Tasking Order 4.1.3 Send WSSN Tasking Order to WSSN Output From: 3.0 Classify (Conduct Behavior Analysis)
WSSN Tasking Order Data Received	Triggers Function(s): 4.1.2 Generate WSSN Tasking Order Output From: 4.1.1 Receive WSSN Tasking Order Data from Watchman Server
WSSN Tasking Order Ready for Send	Triggers Function(s): 4.1.3 Send WSSN Tasking Order to WSSN Output From: 4.1.2 Generate WSSN Tasking Order

4.1.3 Send WSSN Tasking Order to WSSN

Allocated To:
HW.3 (Dell PC) Camera Node Command Center
P Electrical Power
S.1.2 WSSN C2 Node Comms

Table 32 4.1.3 Send WSSN Tasking Order to WSSN Interfacing Items

Interfacing Items	Source / Destination
WSSN Tasking Order	Input To: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2 Output From: 4.1 Task WSSN 4.1.3 Send WSSN Tasking Order to WSSN
WSSN Tasking Order Data	Input To: 4.0 Respond 4.1 Task WSSN 4.1.2 Generate WSSN Tasking Order 4.1.3 Send WSSN Tasking Order to WSSN Output From: 3.0 Classify (Conduct Behavior Analysis)
WSSN Tasking Order Ready for Send	Triggers Function(s): 4.1.3 Send WSSN Tasking Order to WSSN Output From: 4.1.2 Generate WSSN Tasking Order

4.2 Process Tasking Order

Allocated To:
P Electrical Power
S.2 WSSN Agent

Table 33 4.2 Process Tasking Order Interfacing Items

Interfacing Items	Source / Destination
Contact Position	Input To: 4.3 Execute WSSN Tasking Order 4.3.1 Navigate to COI Zone Output From: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2
Required Data Type	Input To:

5 Functional Behavior Model

Table 33 4.2 Process Tasking Order Interfacing Items

Interfacing Items	Source / Destination
	4.3 Execute WSSN Tasking Order 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color 4.3.4.3 Collect COI Video Triggers Function(s): 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage Output From: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2
WSSN Comms Request	Triggers Function(s): 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2
WSSN Tasking Order	Input To: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2 Output From: 4.1 Task WSSN 4.1.3 Send WSSN Tasking Order to WSSN

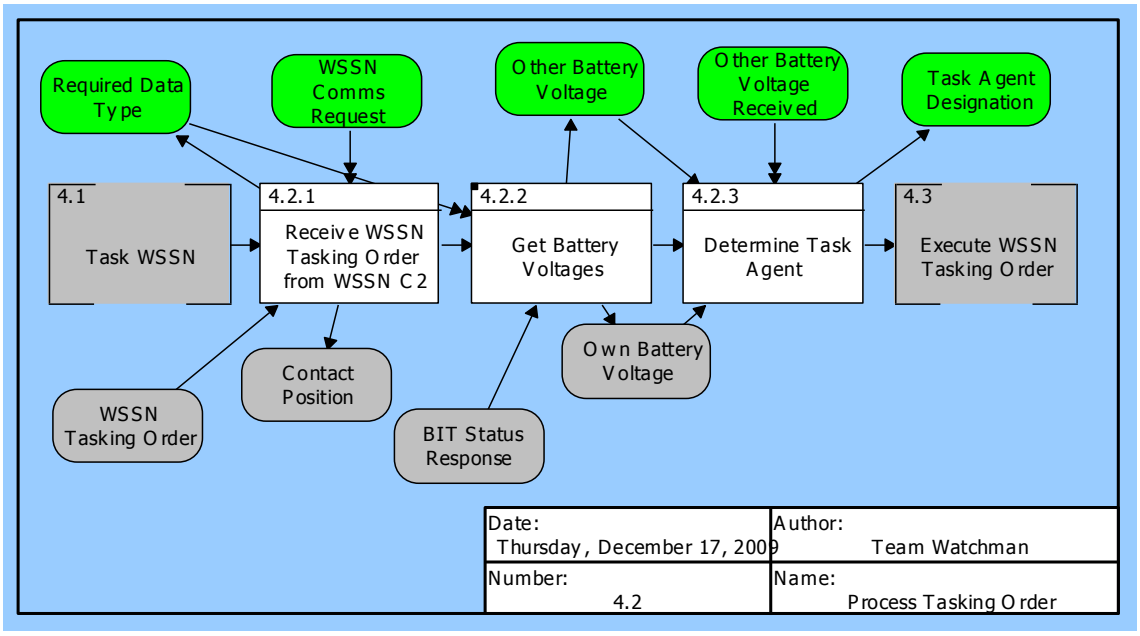

Figure 28 Process Tasking Order Enhanced FFBD

5 Functional Behavior Model

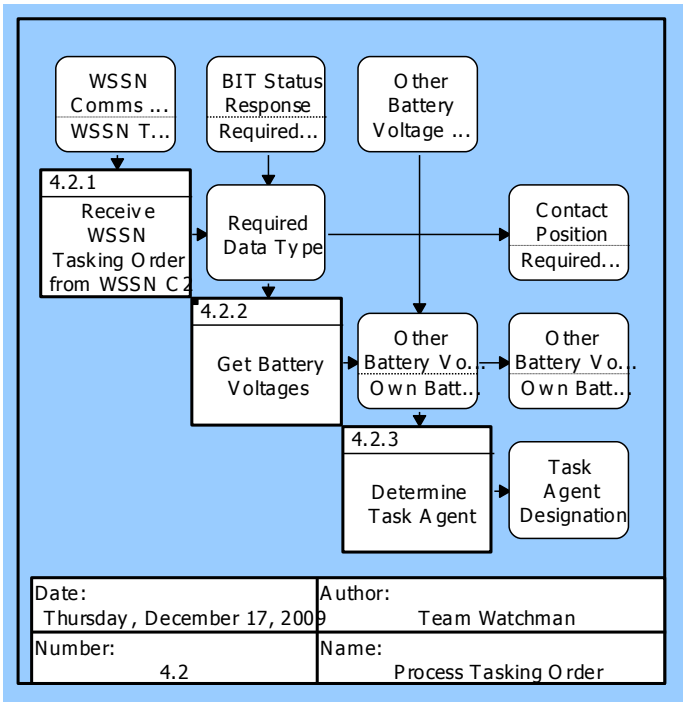

Figure 29 Process Tasking Order N2 Diagram

5 Functional Behavior Model

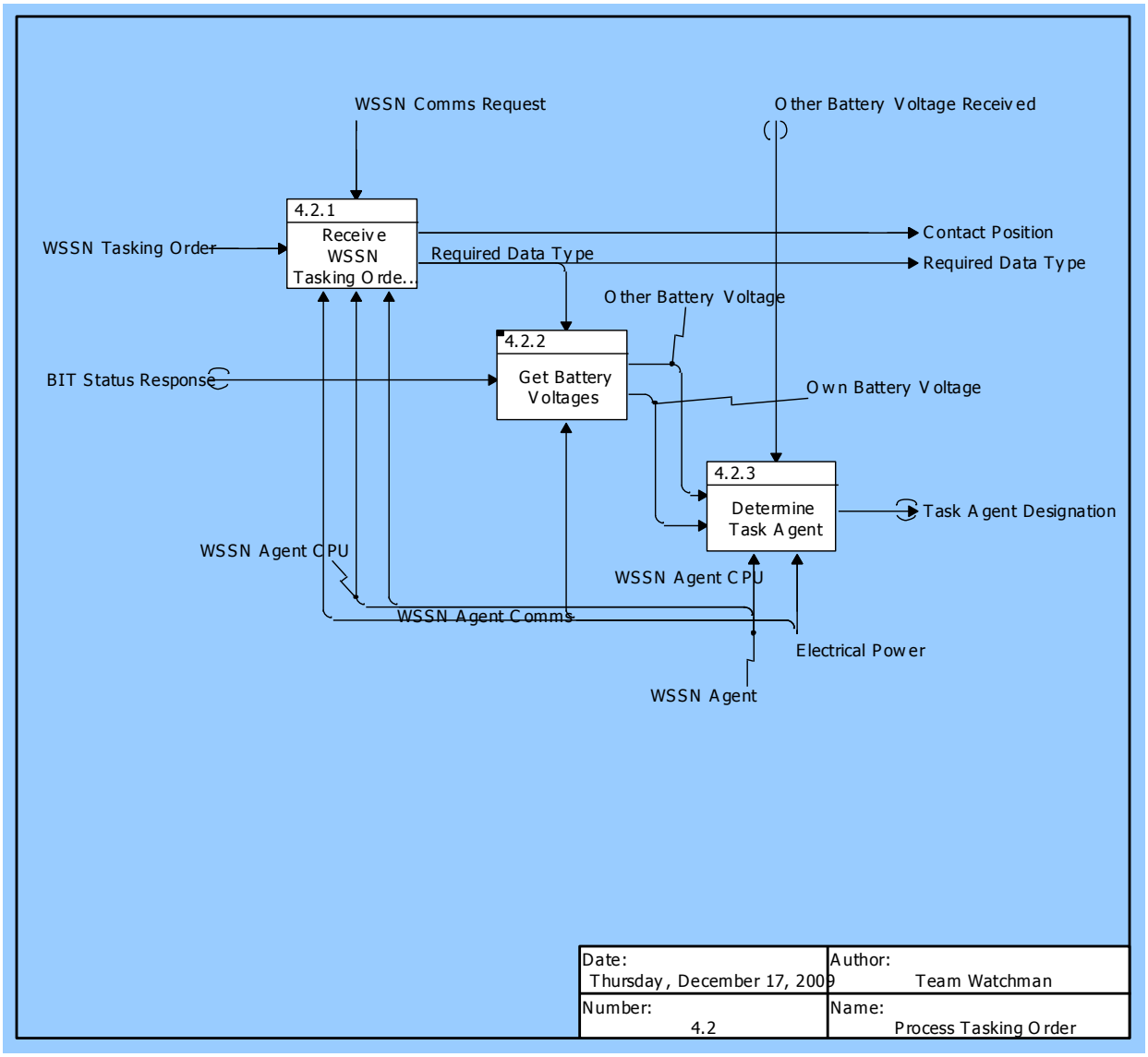

Figure 30 Process Tasking Order IDEF0 Diagram

4.2.1 Receive WSSN Tasking Order from WSSN C2

Allocated To:

P Electrical Power
S.2.1 WSSN Agent CPU
S.2.4 WSSN Agent Comms

Table 34 4.2.1 Receive WSSN Tasking Order from WSSN C2 Interfacing Items

Interfacing Items	Source / Destination
Contact Position	Input To: 4.3 Execute WSSN Tasking Order 4.3.1 Navigate to COI Zone

Table 34 4.2.1 Receive WSSN Tasking Order from WSSN C2 Interfacing Items

Interfacing Items	Source / Destination
	Output From: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2
Required Data Type	Input To: 4.3 Execute WSSN Tasking Order 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color 4.3.4.3 Collect COI Video Triggers Function(s): 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage Output From: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2
WSSN Comms Request	Triggers Function(s): 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2
WSSN Tasking Order	Input To: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2 Output From: 4.1 Task WSSN 4.1.3 Send WSSN Tasking Order to WSSN

Consumes Resource(s):
R.3 WSSN Processor
Acquire Available: true
Amount: Normal (μ: 100.0, stdDev: 20.0, stream: 1)

4.2.2 Get Battery Voltages

Allocated To:
P Electrical Power

Table 35 4.2.2 Get Battery Voltages Interfacing Items

Interfacing Items	Source / Destination
BIT Status Response [UUV-ITM-0015]	Input To: 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage

5 Functional Behavior Model

Table 35 4.2.2 Get Battery Voltages Interfacing Items

Interfacing Items	Source / Destination
	Output From: O Perform Overhead Functions [UUV-FCN-0020] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] O.6 Initialize WSSN Agent O.6.3 Enter WSSN Tasking Order Receive Mode
Other Battery Voltage	Input To: 4.2.2.4 Compare Battery Voltages 4.2.3 Determine Task Agent Triggers Function(s): 4.2.2.4 Compare Battery Voltages Output From: 4.2.2 Get Battery Voltages 4.2.2.3 Receive Battery Voltage from Other Agent
Own Battery Voltage	Input To: 4.2.2.2 Send Own Battery Voltage to Other Agent 4.2.2.4 Compare Battery Voltages 4.2.3 Determine Task Agent Output From: 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage
Required Data Type	Input To: 4.3 Execute WSSN Tasking Order 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color 4.3.4.3 Collect COI Video Triggers Function(s): 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage Output From: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2

5 Functional Behavior Model

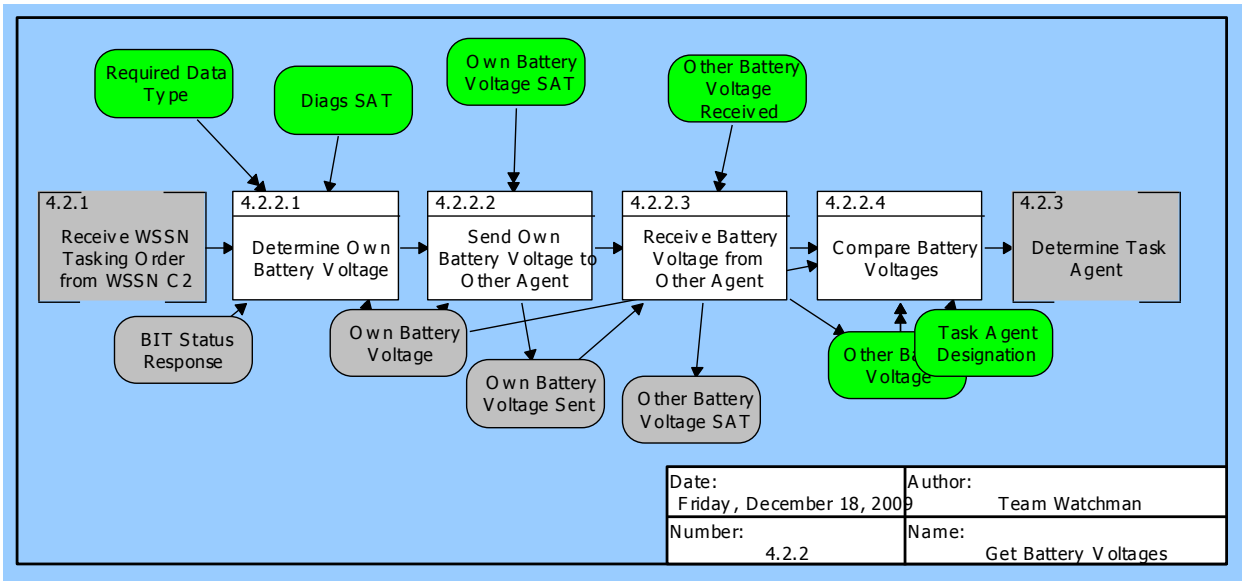

Figure 31 Get Battery Voltages Enhanced FFBD

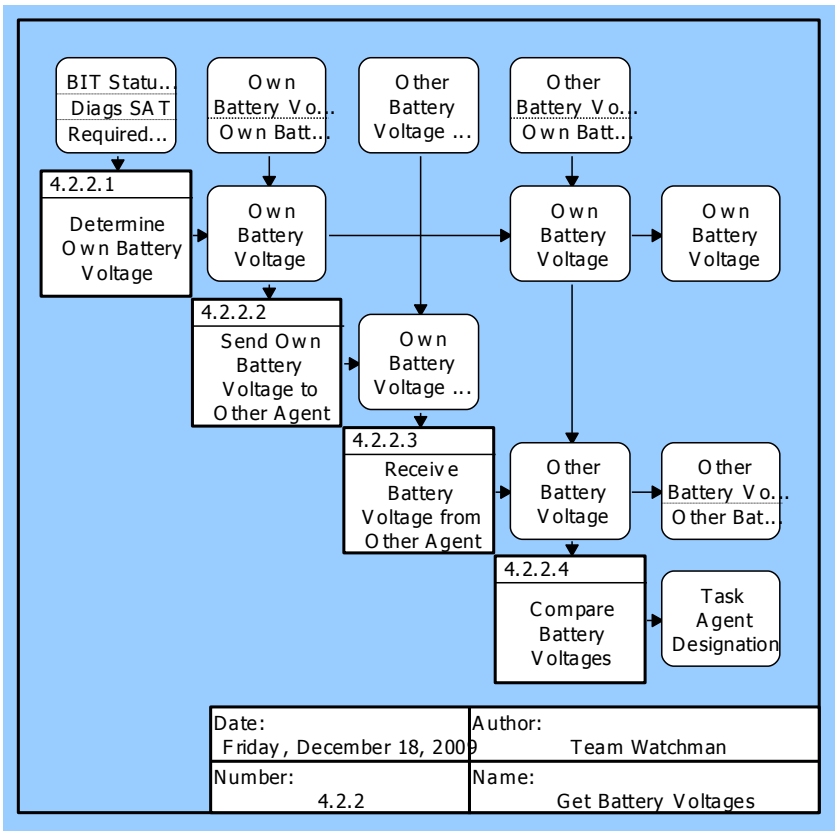

Figure 32 Get Battery Voltages N2 Diagram

5 Functional Behavior Model

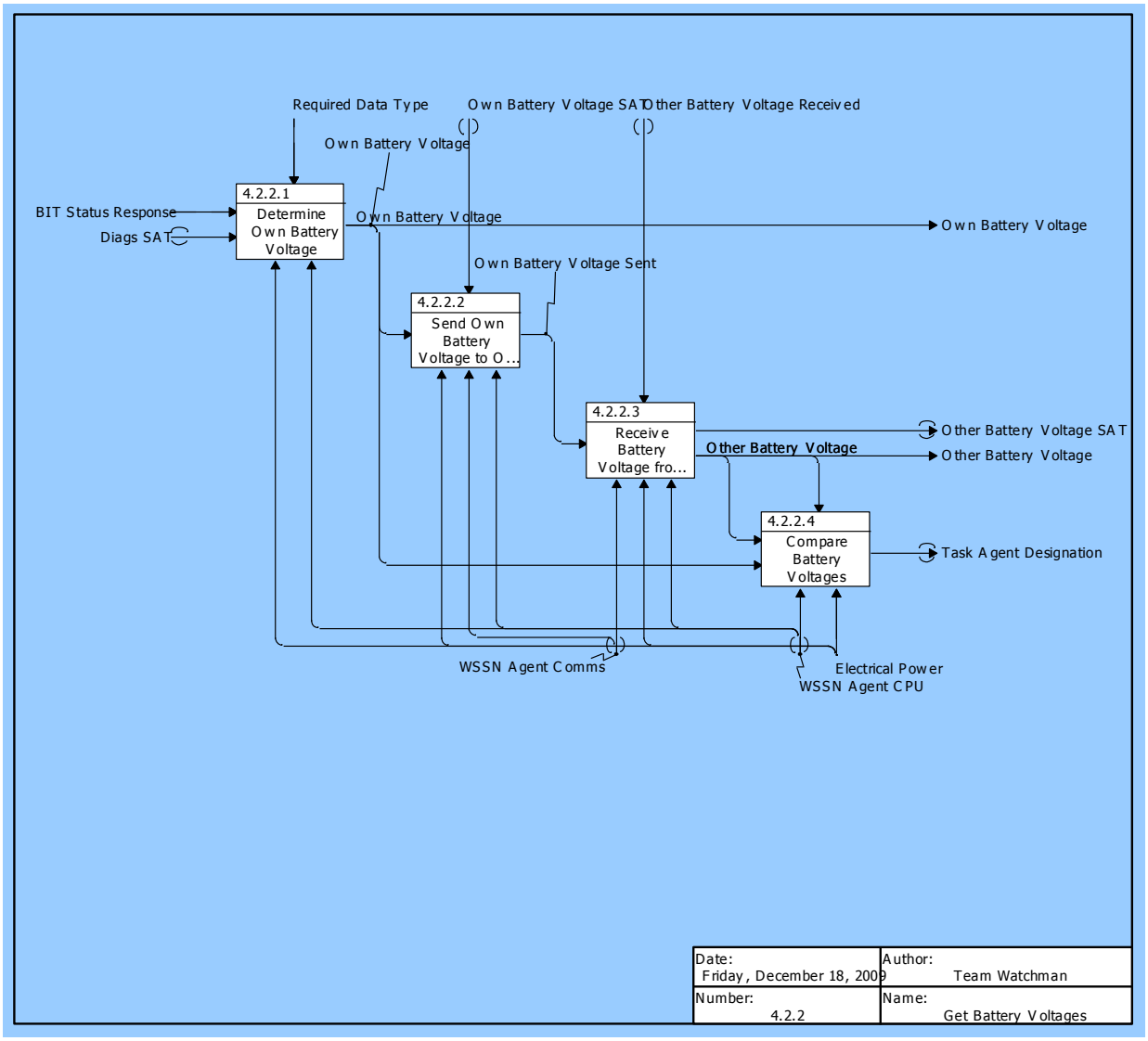

Figure 33 Get Battery Voltages IDEF0 Diagram

4.2.2.1 Determine Own Battery Voltage

Allocated To:

P Electrical Power

S.2.1 WSSN Agent CPU

Table 36 4.2.2.1 Determine Own Battery Voltage Interfacing Items

Interfacing Items	Source / Destination
BIT Status Response [UUV-ITM-0015]	Input To: 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage Output From:

Table 36 4.2.2.1 Determine Own Battery Voltage Interfacing Items

Interfacing Items	Source / Destination
	O Perform Overhead Functions [UUV-FCN-0020] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] O.6 Initialize WSSN Agent O.6.3 Enter WSSN Tasking Order Receive Mode
Diags SAT	Input To: 4.2.2.1 Determine Own Battery Voltage O.6.1.2 Designate Primary Tasking Triggers Function(s): O.6.1.2 Designate Primary Tasking Output From: O.6.1.1 Perform Diagnostics
Own Battery Voltage	Input To: 4.2.2.2 Send Own Battery Voltage to Other Agent 4.2.2.4 Compare Battery Voltages 4.2.3 Determine Task Agent Output From: 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage
Required Data Type	Input To: 4.3 Execute WSSN Tasking Order 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color 4.3.4.3 Collect COI Video Triggers Function(s): 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage Output From: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2

4.2.2.2 Send Own Battery Voltage to Other Agent

Allocated To:
- P Electrical Power
- S.2.1 WSSN Agent CPU
- S.2.4 WSSN Agent Comms

Table 37 4.2.2.2 Send Own Battery Voltage to Other Agent Interfacing Items

Interfacing Items	Source / Destination
Own Battery Voltage	Input To: 4.2.2.2 Send Own Battery Voltage to Other Agent 4.2.2.4 Compare Battery Voltages 4.2.3 Determine Task Agent Output From: 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage
Own Battery Voltage SAT	Triggers Function(s): 4.2.2.2 Send Own Battery Voltage to Other Agent
Own Battery Voltage Sent	Input To: 4.2.2.3 Receive Battery Voltage from Other Agent Output From: 4.2.2.2 Send Own Battery Voltage to Other Agent

4.2.2.3 Receive Battery Voltage from Other Agent

Allocated To:
- P Electrical Power
- S.2.1 WSSN Agent CPU
- S.2.4 WSSN Agent Comms

Table 38 4.2.2.3 Receive Battery Voltage from Other Agent Interfacing Items

Interfacing Items	Source / Destination
Other Battery Voltage	Input To: 4.2.2.4 Compare Battery Voltages 4.2.3 Determine Task Agent Triggers Function(s): 4.2.2.4 Compare Battery Voltages Output From: 4.2.2 Get Battery Voltages 4.2.2.3 Receive Battery Voltage from Other Agent
Other Battery Voltage Received	Triggers Function(s): 4.2.2.3 Receive Battery Voltage from Other Agent 4.2.3 Determine Task Agent
Other Battery Voltage SAT	Output From: 4.2.2.3 Receive Battery Voltage from Other Agent
Own Battery Voltage Sent	Input To: 4.2.2.3 Receive Battery Voltage from Other Agent Output From:

Table 38 4.2.2.3 Receive Battery Voltage from Other Agent Interfacing Items

Interfacing Items	Source / Destination
	4.2.2.2 Send Own Battery Voltage to Other Agent

4.2.2.4 Compare Battery Voltages

Allocated To:
P Electrical Power
S.2.1 WSSN Agent CPU

Table 39 4.2.2.4 Compare Battery Voltages Interfacing Items

Interfacing Items	Source / Destination
Other Battery Voltage	Input To: 4.2.2.4 Compare Battery Voltages 4.2.3 Determine Task Agent Triggers Function(s): 4.2.2.4 Compare Battery Voltages Output From: 4.2.2 Get Battery Voltages 4.2.2.3 Receive Battery Voltage from Other Agent
Own Battery Voltage	Input To: 4.2.2.2 Send Own Battery Voltage to Other Agent 4.2.2.4 Compare Battery Voltages 4.2.3 Determine Task Agent Output From: 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage
Task Agent Designation	Triggers Function(s): 4.3 Execute WSSN Tasking Order 4.3.1 Navigate to COI Zone Output From: 4.2.2.4 Compare Battery Voltages 4.2.3 Determine Task Agent

4.2.3 Determine Task Agent

Allocated To:
P Electrical Power
S.2.1 WSSN Agent CPU

Table 40 4.2.3 Determine Task Agent Interfacing Items

Interfacing Items	Source / Destination
Other Battery Voltage	Input To: 4.2.2.4 Compare Battery Voltages 4.2.3 Determine Task Agent Triggers Function(s): 4.2.2.4 Compare Battery Voltages Output From: 4.2.2 Get Battery Voltages 4.2.2.3 Receive Battery Voltage from Other Agent
Other Battery Voltage Received	Triggers Function(s): 4.2.2.3 Receive Battery Voltage from Other Agent 4.2.3 Determine Task Agent
Own Battery Voltage	Input To: 4.2.2.2 Send Own Battery Voltage to Other Agent 4.2.2.4 Compare Battery Voltages 4.2.3 Determine Task Agent Output From: 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage
Task Agent Designation	Triggers Function(s): 4.3 Execute WSSN Tasking Order 4.3.1 Navigate to COI Zone Output From: 4.2.2.4 Compare Battery Voltages 4.2.3 Determine Task Agent

4.3 Execute WSSN Tasking Order

Allocated To:
P Electrical Power
S.2 WSSN Agent

Table 41 4.3 Execute WSSN Tasking Order Interfacing Items

Interfacing Items	Source / Destination
Contact Position	Input To: 4.3 Execute WSSN Tasking Order 4.3.1 Navigate to COI Zone Output From: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2

5 Functional Behavior Model

Table 41 4.3 Execute WSSN Tasking Order Interfacing Items

Interfacing Items	Source / Destination
Data Collection Complete	Triggers Function(s): 4.4 Respond to WSSN Tasking Order 4.4.1 Generate WSSN Tasking Order Response Output From: 4.3 Execute WSSN Tasking Order 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color
Required Data Type	Input To: 4.3 Execute WSSN Tasking Order 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color 4.3.4.3 Collect COI Video Triggers Function(s): 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage Output From: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2
Task Agent Designation	Triggers Function(s): 4.3 Execute WSSN Tasking Order 4.3.1 Navigate to COI Zone Output From: 4.2.2.4 Compare Battery Voltages 4.2.3 Determine Task Agent

5 Functional Behavior Model

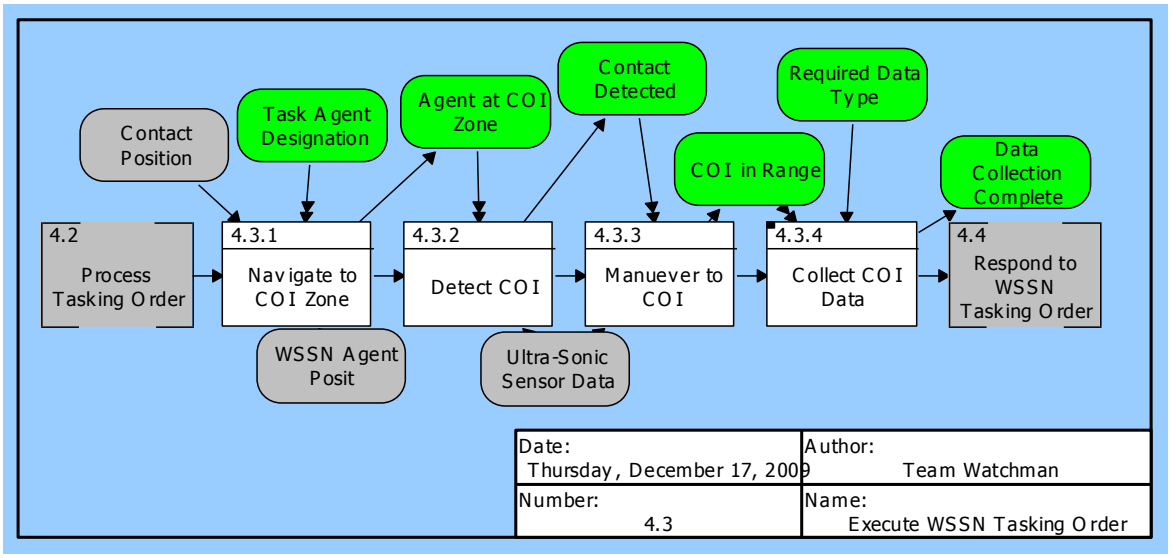

Figure 34 Execute WSSN Tasking Order Enhanced FFBD

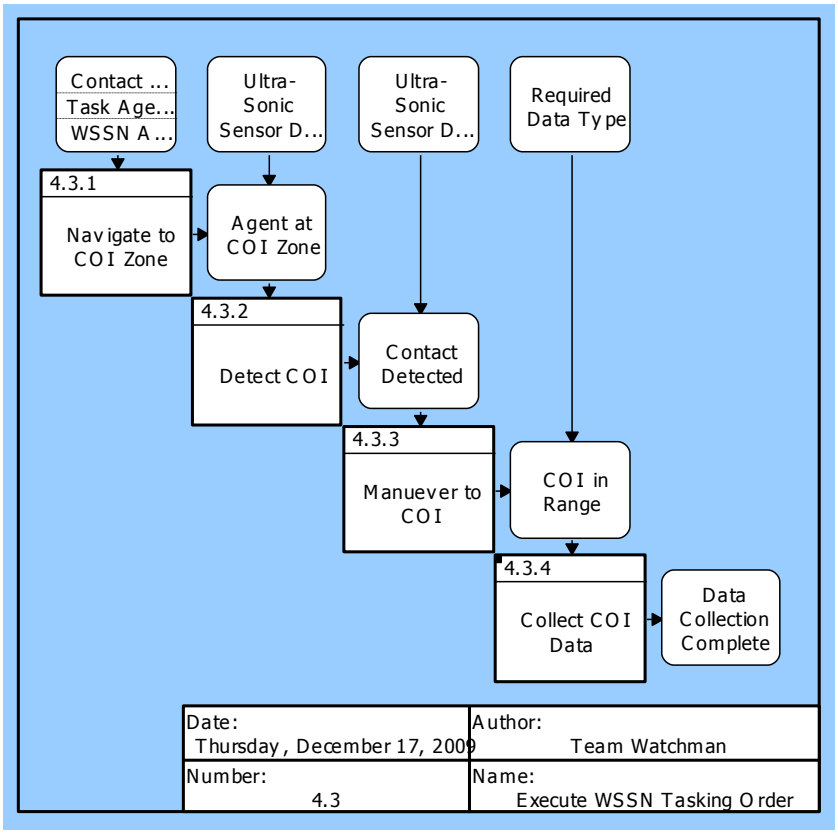

Figure 35 Execute WSSN Tasking Order N2 Diagram

5 Functional Behavior Model

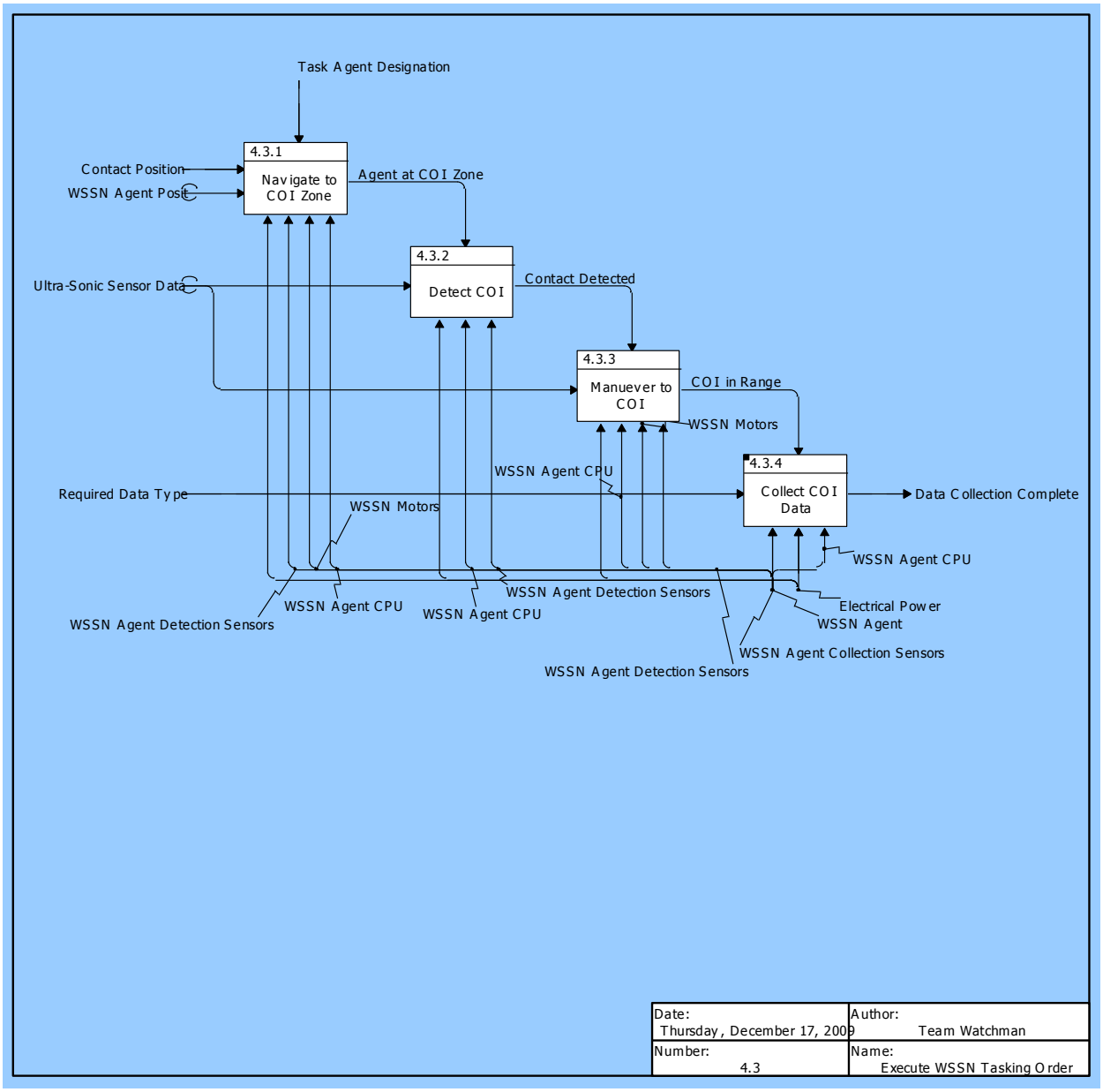

Figure 36 Execute WSSN Tasking Order IDEF0 Diagram

4.3.1 Navigate to COI Zone

Allocated To:

P Electrical Power
S.2.1 WSSN Agent CPU
S.2.3 WSSN Agent Detection Sensors
S.2.5 WSSN Motors

Based On:

NCOE JIC 7.9 Perform Intelligent Search

5 Functional Behavior Model

Table 42 4.3.1 Navigate to COI Zone Interfacing Items

Interfacing Items	Source / Destination
Agent at COI Zone	Triggers Function(s): 4.3.2 Detect COI Output From: 4.3.1 Navigate to COI Zone
Contact Position	Input To: 4.3 Execute WSSN Tasking Order 4.3.1 Navigate to COI Zone Output From: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2
Task Agent Designation	Triggers Function(s): 4.3 Execute WSSN Tasking Order 4.3.1 Navigate to COI Zone Output From: 4.2.2.4 Compare Battery Voltages 4.2.3 Determine Task Agent
WSSN Agent Posit	Input To: 4.3.1 Navigate to COI Zone

Consumes Resource(s):
R.3 WSSN Processor
Acquire Available: true
Amount: Normal (μ: 750.0, stdDev: 150.0, stream: 1)

4.3.2 Detect COI

Allocated To:
P Electrical Power
S.2.1 WSSN Agent CPU
S.2.3 WSSN Agent Detection Sensors

Table 43 4.3.2 Detect COI Interfacing Items

Interfacing Items	Source / Destination
Agent at COI Zone	Triggers Function(s): 4.3.2 Detect COI Output From: 4.3.1 Navigate to COI Zone
Contact Detected	Triggers Function(s): 4.3.3 Maneuver to COI Output From:

Table 43 4.3.2 Detect COI Interfacing Items

Interfacing Items	Source / Destination
	4.3.2 Detect COI
Ultra-Sonic Sensor Data	Input To: 4.3.2 Detect COI 4.3.3 Maneuver to COI

4.3.3 Maneuver to COI

Allocated To:
- P Electrical Power
- S.2.1 WSSN Agent CPU
- S.2.3 WSSN Agent Detection Sensors
- S.2.5 WSSN Motors

Table 44 4.3.3 Maneuver to COI Interfacing Items

Interfacing Items	Source / Destination
COI in Range	Triggers Function(s): 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color 4.3.4.3 Collect COI Video Output From: 4.3.3 Maneuver to COI
Contact Detected	Triggers Function(s): 4.3.3 Maneuver to COI Output From: 4.3.2 Detect COI
Ultra-Sonic Sensor Data	Input To: 4.3.2 Detect COI 4.3.3 Maneuver to COI

4.3.4 Collect COI Data

Allocated To:
- P Electrical Power
- S.2.1 WSSN Agent CPU
- S.2.2 WSSN Agent Collection Sensors

Based On:
- NCOE JIC 16.1 Collect Sensor Data

5 Functional Behavior Model

Table 45 4.3.4 Collect COI Data Interfacing Items

Interfacing Items	Source / Destination
COI in Range	Triggers Function(s): 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color 4.3.4.3 Collect COI Video Output From: 4.3.3 Maneuver to COI
Data Collection Complete	Triggers Function(s): 4.4 Respond to WSSN Tasking Order 4.4.1 Generate WSSN Tasking Order Response Output From: 4.3 Execute WSSN Tasking Order 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color
Required Data Type	Input To: 4.3 Execute WSSN Tasking Order 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color 4.3.4.3 Collect COI Video Triggers Function(s): 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage Output From: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2

Consumes Resource(s):
R.3 WSSN Processor
Acquire Available: true
Amount: Normal (μ: 750.0, stdDev: 150.0, stream: 1)

5 Functional Behavior Model

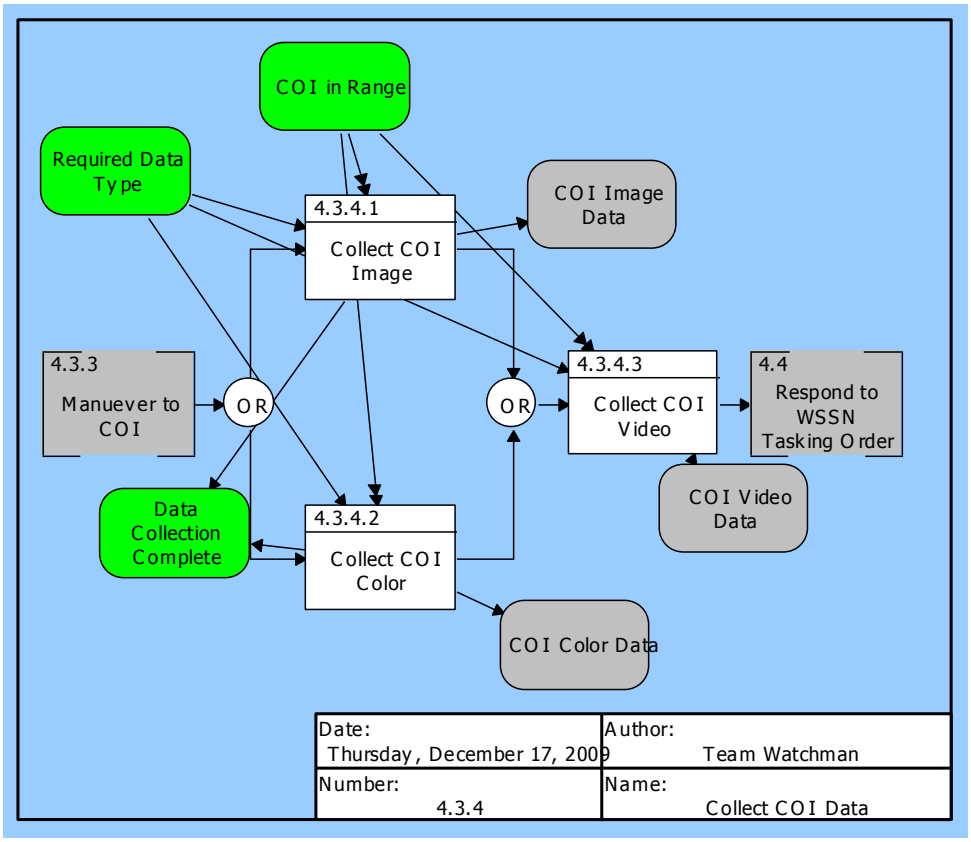

Figure 37 Collect COI Data Enhanced FFBD

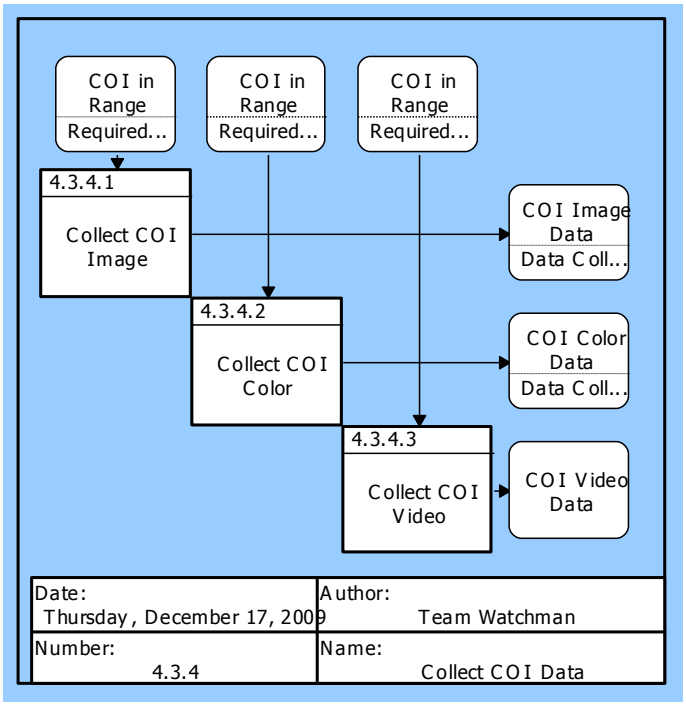

Figure 38 Collect COI Data N2 Diagram

5 Functional Behavior Model

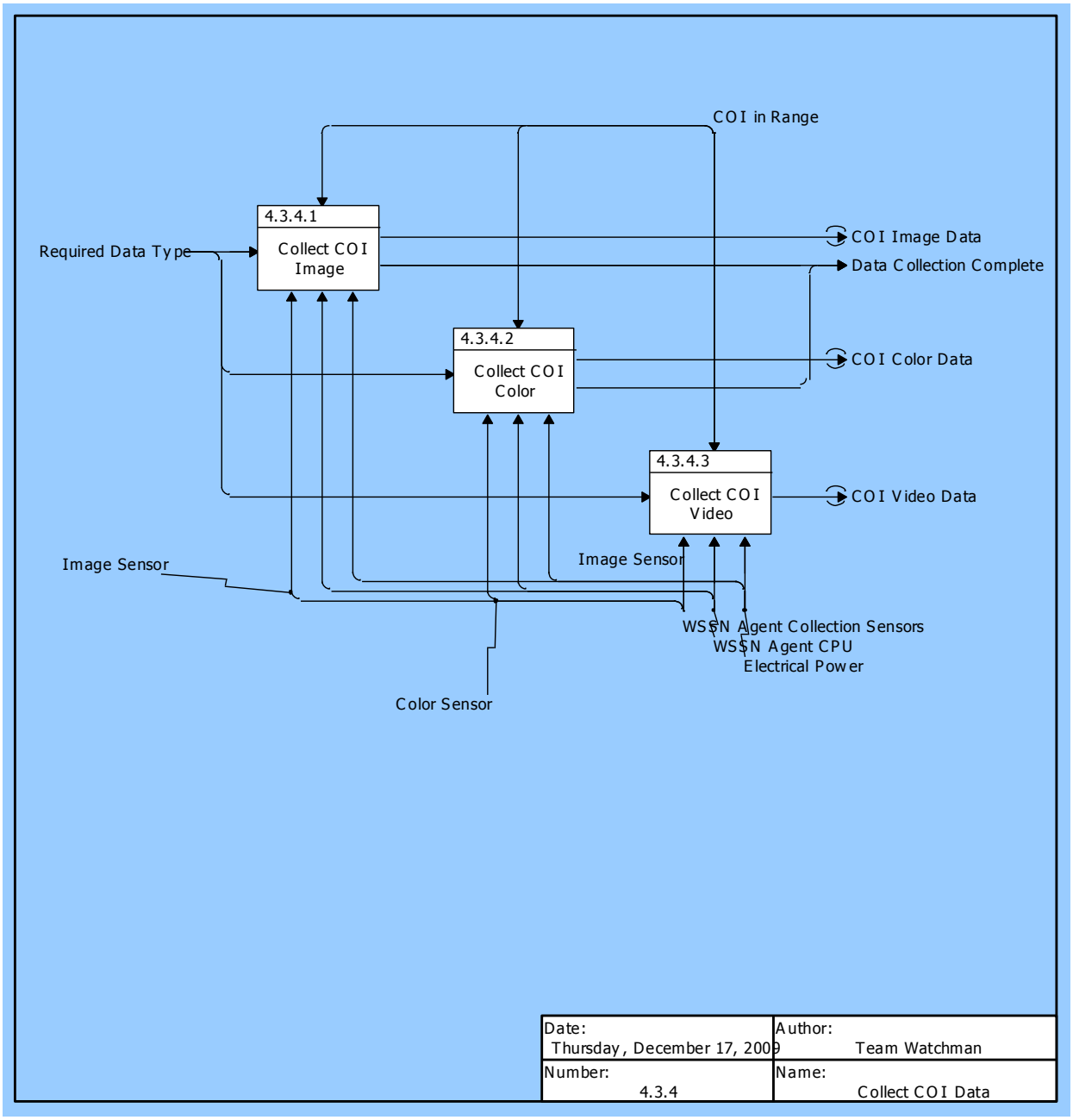

Figure 39 Collect COI Data IDEF0 Diagram

4.3.4.1 Collect COI Image

Allocated To:

P Electrical Power
S.2.1 WSSN Agent CPU
S.2.2.1 Image Sensor

Table 46 4.3.4.1 Collect COI Image Interfacing Items

Interfacing Items	Source / Destination
COI Image Data	Input To: 4.4 Respond to WSSN Tasking Order 4.4.1 Generate WSSN Tasking Order Response Output From: 4.3.4.1 Collect COI Image
COI in Range	Triggers Function(s): 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color 4.3.4.3 Collect COI Video Output From: 4.3.3 Maneuver to COI
Data Collection Complete	Triggers Function(s): 4.4 Respond to WSSN Tasking Order 4.4.1 Generate WSSN Tasking Order Response Output From: 4.3 Execute WSSN Tasking Order 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color
Required Data Type	Input To: 4.3 Execute WSSN Tasking Order 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color 4.3.4.3 Collect COI Video Triggers Function(s): 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage Output From: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2

4.3.4.2 Collect COI Color

Allocated To:
P Electrical Power
S.2.1 WSSN Agent CPU
S.2.2.2 Color Sensor

Table 47 4.3.4.2 Collect COI Color Interfacing Items

Interfacing Items	Source / Destination
COI Color Data	Input To: 4.4 Respond to WSSN Tasking Order 4.4.1 Generate WSSN Tasking Order Response Output From: 4.3.4.2 Collect COI Color
COI in Range	Triggers Function(s): 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color 4.3.4.3 Collect COI Video Output From: 4.3.3 Maneuver to COI
Data Collection Complete	Triggers Function(s): 4.4 Respond to WSSN Tasking Order 4.4.1 Generate WSSN Tasking Order Response Output From: 4.3 Execute WSSN Tasking Order 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color
Required Data Type	Input To: 4.3 Execute WSSN Tasking Order 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color 4.3.4.3 Collect COI Video Triggers Function(s): 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage Output From: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2

4.3.4.3 Collect COI Video

Allocated To:
P Electrical Power
S.2.1 WSSN Agent CPU

S.2.2.1 Image Sensor

Table 48 4.3.4.3 Collect COI Video Interfacing Items

Interfacing Items	Source / Destination
COI in Range	Triggers Function(s): 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color 4.3.4.3 Collect COI Video Output From: 4.3.3 Maneuver to COI
COI Video Data	Output From: 4.3.4.3 Collect COI Video
Required Data Type	Input To: 4.3 Execute WSSN Tasking Order 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color 4.3.4.3 Collect COI Video Triggers Function(s): 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage Output From: 4.2 Process Tasking Order 4.2.1 Receive WSSN Tasking Order from WSSN C2

4.4 Respond to WSSN Tasking Order

Allocated To:
HW.3 (Dell PC) Camera Node Command Center
P Electrical Power
S.2 WSSN Agent

Table 49 4.4 Respond to WSSN Tasking Order Interfacing Items

Interfacing Items	Source / Destination
COI Color Data	Input To: 4.4 Respond to WSSN Tasking Order 4.4.1 Generate WSSN Tasking Order Response Output From: 4.3.4.2 Collect COI Color
COI Image Data	Input To:

5 Functional Behavior Model

Table 49 4.4 Respond to WSSN Tasking Order Interfacing Items

Interfacing Items	Source / Destination
	4.4 Respond to WSSN Tasking Order 4.4.1 Generate WSSN Tasking Order Response Output From: 4.3.4.1 Collect COI Image
Data Collection Complete	Triggers Function(s): 4.4 Respond to WSSN Tasking Order 4.4.1 Generate WSSN Tasking Order Response Output From: 4.3 Execute WSSN Tasking Order 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color
WSSN Task Order Response Data	Input To: Ext.1 Analyze WSSN Tasking Order Response Data Output From: 4.0 Respond 4.4 Respond to WSSN Tasking Order 4.4.4 Process WSSN Tasking Order Response

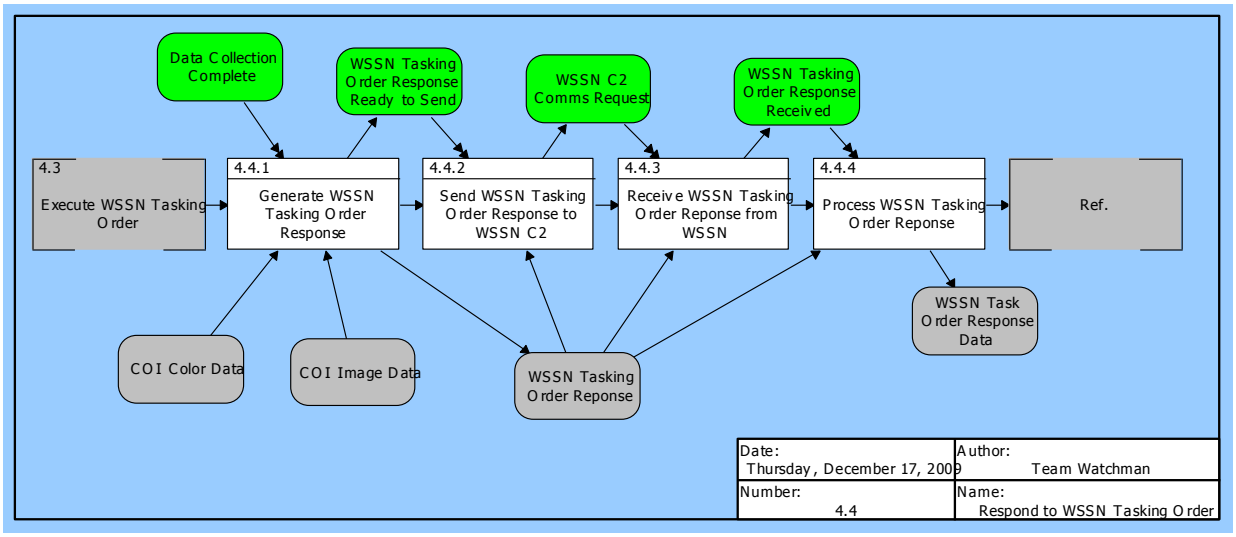

Figure 40 Respond to WSSN Tasking Order Enhanced FFBD

5 Functional Behavior Model

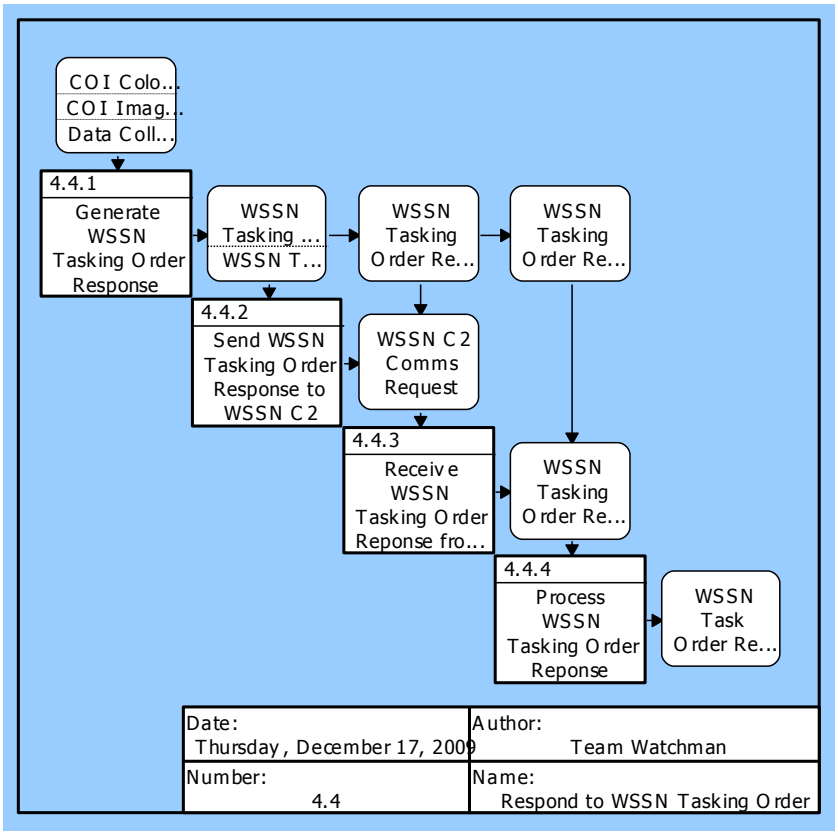

Figure 41 Respond to WSSN Tasking Order N2 Diagram

5 Functional Behavior Model

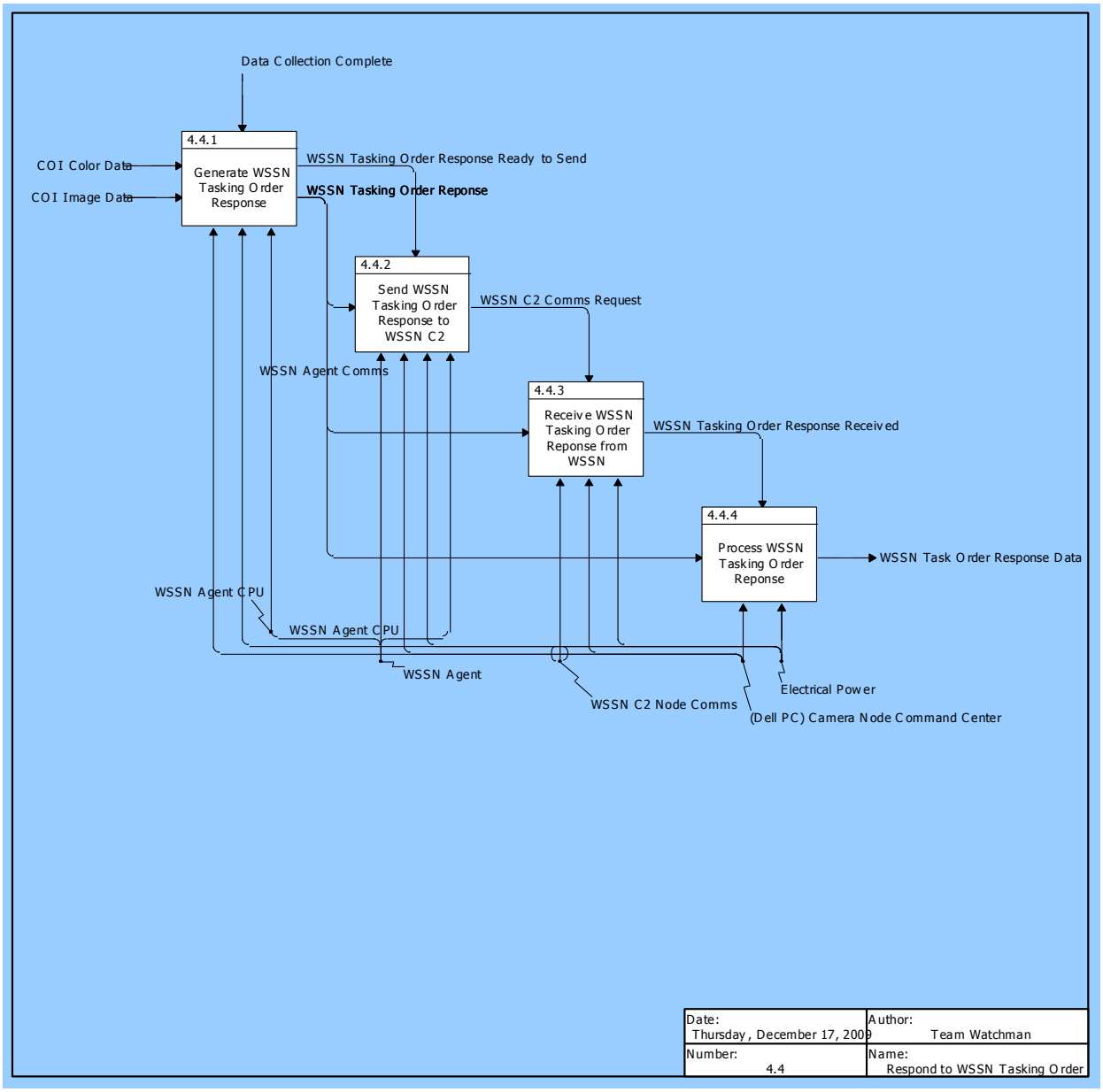

Figure 42 Respond to WSSN Tasking Order IDEF0 Diagram

4.4.1 Generate WSSN Tasking Order Response

Allocated To:

HW.3 (Dell PC) Camera Node Command Center
P Electrical Power
S.2.1 WSSN Agent CPU

Table 50 4.4.1 Generate WSSN Tasking Order Response Interfacing Items

Interfacing Items	Source / Destination
COI Color Data	Input To:

Table 50 4.4.1 Generate WSSN Tasking Order Response Interfacing Items

Interfacing Items	Source / Destination
	4.4 Respond to WSSN Tasking Order 4.4.1 Generate WSSN Tasking Order Response Output From: 4.3.4.2 Collect COI Color
COI Image Data	Input To: 4.4 Respond to WSSN Tasking Order 4.4.1 Generate WSSN Tasking Order Response Output From: 4.3.4.1 Collect COI Image
Data Collection Complete	Triggers Function(s): 4.4 Respond to WSSN Tasking Order 4.4.1 Generate WSSN Tasking Order Response Output From: 4.3 Execute WSSN Tasking Order 4.3.4 Collect COI Data 4.3.4.1 Collect COI Image 4.3.4.2 Collect COI Color
WSSN Tasking Order Response	Input To: 4.4.2 Send WSSN Tasking Order Response to WSSN C2 4.4.3 Receive WSSN Tasking Order Response from WSSN 4.4.4 Process WSSN Tasking Order Response Output From: 4.4.1 Generate WSSN Tasking Order Response
WSSN Tasking Order Response Ready to Send	Triggers Function(s): 4.4.2 Send WSSN Tasking Order Response to WSSN C2 Output From: 4.4.1 Generate WSSN Tasking Order Response

4.4.2 Send WSSN Tasking Order Response to WSSN C2

Allocated To:
HW.3 (Dell PC) Camera Node Command Center
P Electrical Power
S.2.1 WSSN Agent CPU
S.2.4 WSSN Agent Comms

Based On:
NCOE JIC 6.2 Transmit Information

Table 51 4.4.2 Send WSSN Tasking Order Response to WSSN C2 Interfacing Items

Interfacing Items	Source / Destination
WSSN C2 Comms Request	Triggers Function(s): 4.4.3 Receive WSSN Tasking Order Response from WSSN Output From: 4.4.2 Send WSSN Tasking Order Response to WSSN C2
WSSN Tasking Order Response	Input To: 4.4.2 Send WSSN Tasking Order Response to WSSN C2 4.4.3 Receive WSSN Tasking Order Response from WSSN 4.4.4 Process WSSN Tasking Order Response Output From: 4.4.1 Generate WSSN Tasking Order Response
WSSN Tasking Order Response Ready to Send	Triggers Function(s): 4.4.2 Send WSSN Tasking Order Response to WSSN C2 Output From: 4.4.1 Generate WSSN Tasking Order Response

Consumes Resource(s):
R.3 WSSN Processor
Acquire Available: true
Amount: Normal (μ: 750.0, stdDev: 150.0, stream: 1)

4.4.3 Receive WSSN Tasking Order Response from WSSN

Allocated To:
HW.3 (Dell PC) Camera Node Command Center
P Electrical Power
S.1.2 WSSN C2 Node Comms

Table 52 4.4.3 Receive WSSN Tasking Order Response from WSSN Interfacing Items

Interfacing Items	Source / Destination
WSSN C2 Comms Request	Triggers Function(s): 4.4.3 Receive WSSN Tasking Order Response from WSSN Output From: 4.4.2 Send WSSN Tasking Order Response to WSSN C2
WSSN Tasking Order Response	Input To:

Table 52 4.4.3 Receive WSSN Tasking Order Response from WSSN Interfacing Items

Interfacing Items	Source / Destination
	4.4.2 Send WSSN Tasking Order Response to WSSN C2 4.4.3 Receive WSSN Tasking Order Response from WSSN 4.4.4 Process WSSN Tasking Order Response Output From: 4.4.1 Generate WSSN Tasking Order Response
WSSN Tasking Order Response Received	Triggers Function(s): 4.4.4 Process WSSN Tasking Order Response Output From: 4.4.3 Receive WSSN Tasking Order Response from WSSN

4.4.4 Process WSSN Tasking Order Response

Allocated To:
HW.3 (Dell PC) Camera Node Command Center
P Electrical Power

Table 53 4.4.4 Process WSSN Tasking Order Response Interfacing Items

Interfacing Items	Source / Destination
WSSN Task Order Response Data	Input To: Ext.1 Analyze WSSN Tasking Order Response Data Output From: 4.0 Respond 4.4 Respond to WSSN Tasking Order 4.4.4 Process WSSN Tasking Order Response
WSSN Tasking Order Response	Input To: 4.4.2 Send WSSN Tasking Order Response to WSSN C2 4.4.3 Receive WSSN Tasking Order Response from WSSN 4.4.4 Process WSSN Tasking Order Response Output From: 4.4.1 Generate WSSN Tasking Order Response
WSSN Tasking Order Response Received	Triggers Function(s): 4.4.4 Process WSSN Tasking Order Response Output From: 4.4.3 Receive WSSN Tasking Order Response from WSSN

Ext.1 Analyze WSSN Tasking Order Response Data

Allocated To:
P Electrical Power

Table 54 Ext.1 Analyze WSSN Tasking Order Response Data Interfacing Items

Interfacing Items	Source / Destination
WSSN Task Order Response Data	Input To: Ext.1 Analyze WSSN Tasking Order Response Data Output From: 4.0 Respond 4.4 Respond to WSSN Tasking Order 4.4.4 Process WSSN Tasking Order Response

Ext.1 SDI send WSSN Tasking Order Data

Allocated To:
P Electrical Power

O Perform Overhead Functions [UUV-FCN-0020]

Allocated To:
HW Hardware Suite
HW.1 Mac Server
P Electrical Power
S Software Suite

Based On:
1.2 Agent Configurability [WSSN-REQ-0012]

Table 55 O Perform Overhead Functions Interfacing Items

Interfacing Items	Source / Destination
BIT Status Request [UUV-ITM-0007]	Input To: O Perform Overhead Functions [UUV-FCN-0020] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] O.6 Initialize WSSN Agent O.6.1.1 Perform Diagnostics Triggers Function(s): O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]
BIT Status Response [UUV-ITM-0015]	Input To: 4.2.2 Get Battery Voltages

5 Functional Behavior Model

Table 55 O Perform Overhead Functions Interfacing Items

Interfacing Items	Source / Destination
	4.2.2.1 Determine Own Battery Voltage Output From: O Perform Overhead Functions [UUV-FCN-0020] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] O.6 Initialize WSSN Agent O.6.3 Enter WSSN Tasking Order Receive Mode
Conduct Mission Analysis.NAE.07	Output From: O Perform Overhead Functions [UUV-FCN-0020] O.3 Accept Mission Plan [UUV-FCN-0024]
Crew/Operator	Triggers Function(s): 0 Enhance Domain Awareness 1.5 Manage Video Collection 3.4.2 Evaluate Threat.NAE.07 3.4.3 Alert Generation.NAE.07 O Perform Overhead Functions [UUV-FCN-0020] O.4 Perform User Interface Functions
Feedback Provided.NAE.07	Triggers Function(s): 1.2 Determine Contact Presence Output From: 1.1 Monitor Domain O Perform Overhead Functions [UUV-FCN-0020] O.1 Perform Startup [UUV-FCN-0022] O.4 Perform User Interface Functions O.5 Perform Shut Down [UUV-FCN-0058]
Health and Status [UUV-ITM-0014]	Output From: O Perform Overhead Functions [UUV-FCN-0020] O.4 Perform User Interface Functions
Management of Information.NAE.07	Output From: O Perform Overhead Functions [UUV-FCN-0020] O.4 Perform User Interface Functions
Mission Plan [UUV-ITM-0002]	Input To: O Perform Overhead Functions [UUV-FCN-0020] O.3 Accept Mission Plan [UUV-FCN-0024]
Power [UUV-ITM-0004]	Input To: O Perform Overhead Functions [UUV-FCN-0020] O.1 Perform Startup [UUV-FCN-0022]
Sensor Payload [UUV-ITM-0005]	Input To: O Perform Overhead Functions [UUV-FCN-0020]

5 Functional Behavior Model

Table 55 O Perform Overhead Functions Interfacing Items

Interfacing Items	Source / Destination
	O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]
Shut Down Command [UUV-ITM-0009]	Input To: O.5 Perform Shut Down [UUV-FCN-0058] Triggers Function(s): O Perform Overhead Functions [UUV-FCN-0020] O.5 Perform Shut Down [UUV-FCN-0058]
Startup Command [UUV-ITM-0006]	Triggers Function(s): O Perform Overhead Functions [UUV-FCN-0020] O.1 Perform Startup [UUV-FCN-0022] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] O.6 Initialize WSSN Agent O.6.1.1 Perform Diagnostics

5 Functional Behavior Model

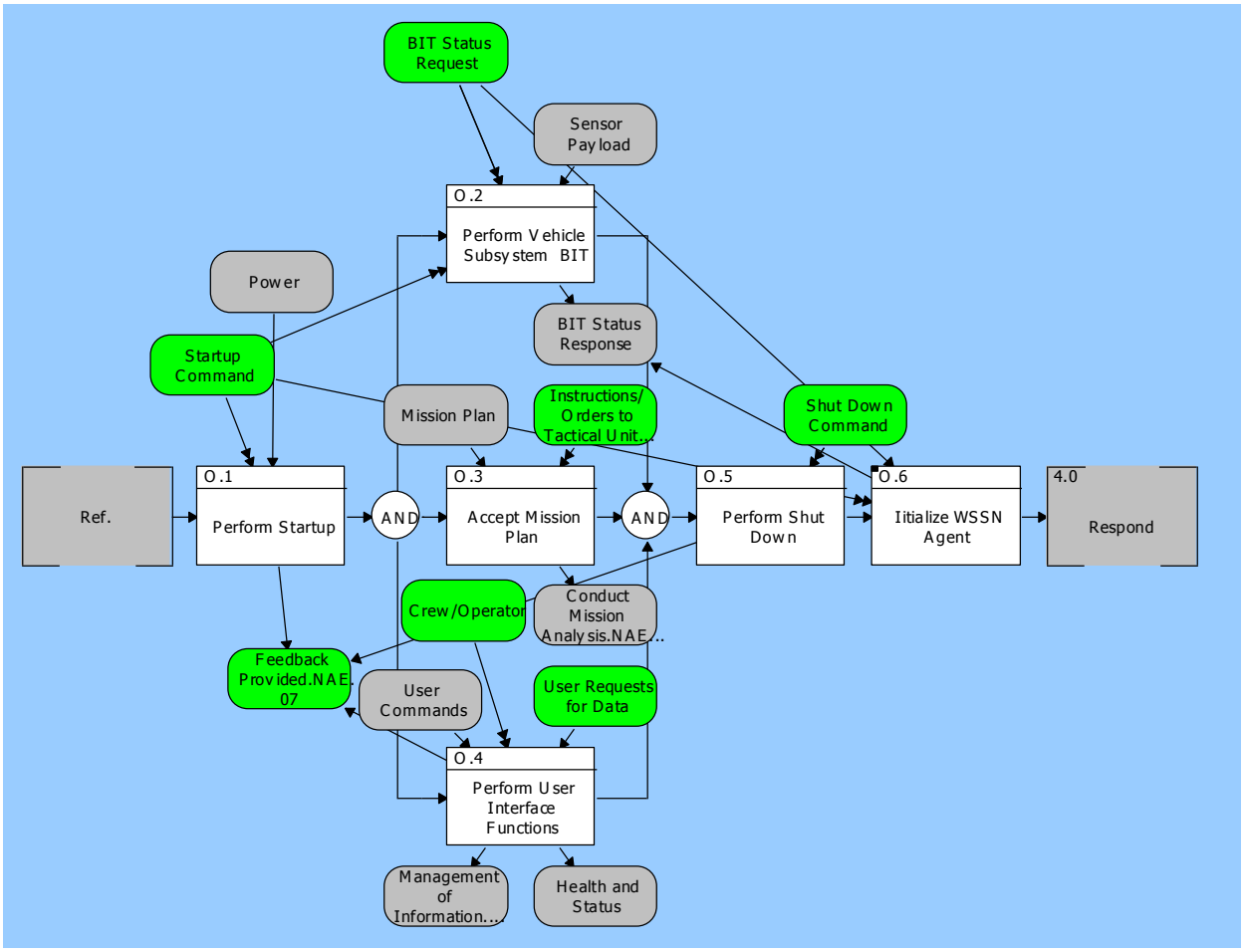

Figure 43 Perform Overhead Functions Enhanced FFBD

5 Functional Behavior Model

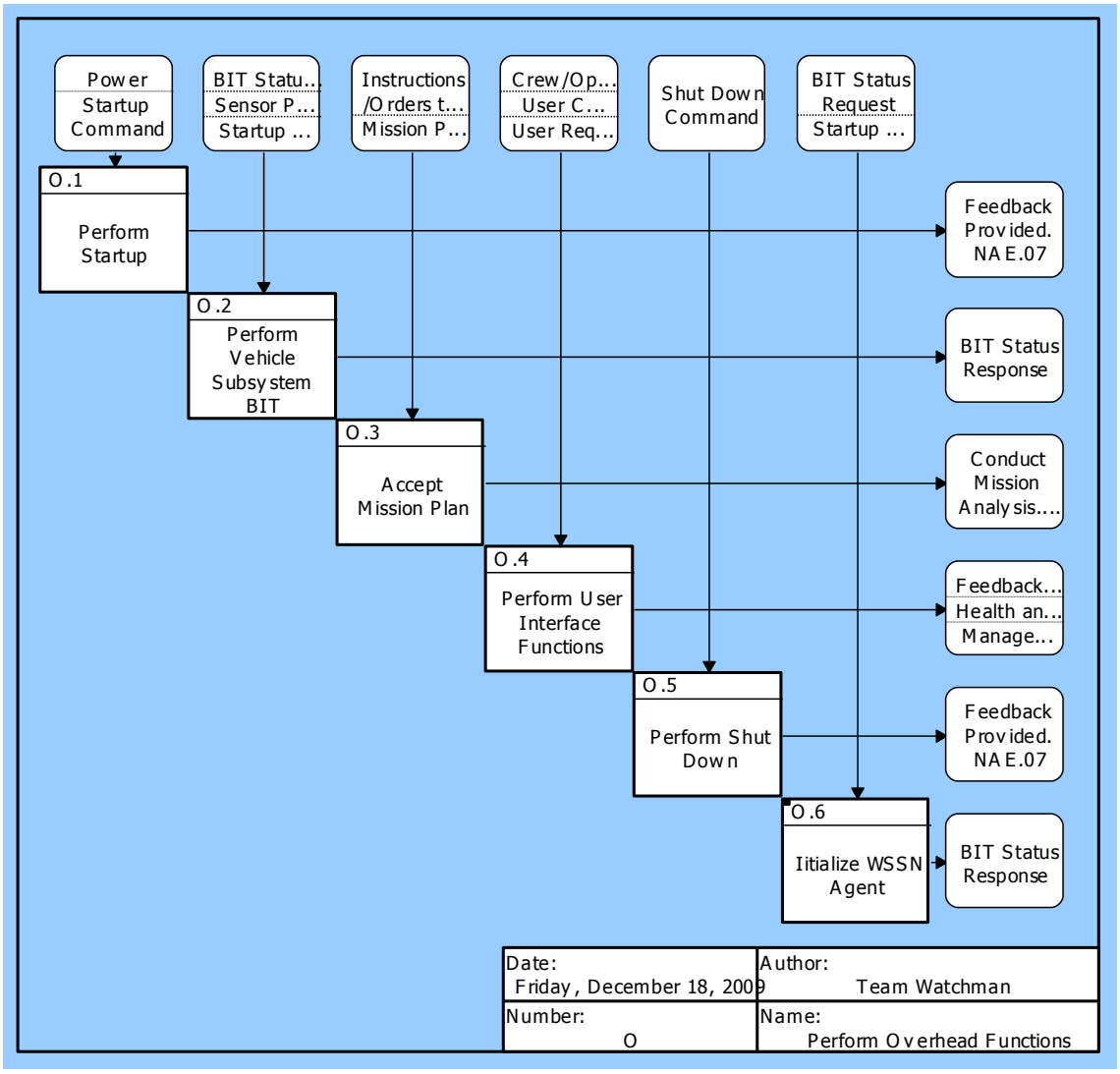

Figure 44 Perform Overhead Functions N2 Diagram

5 Functional Behavior Model

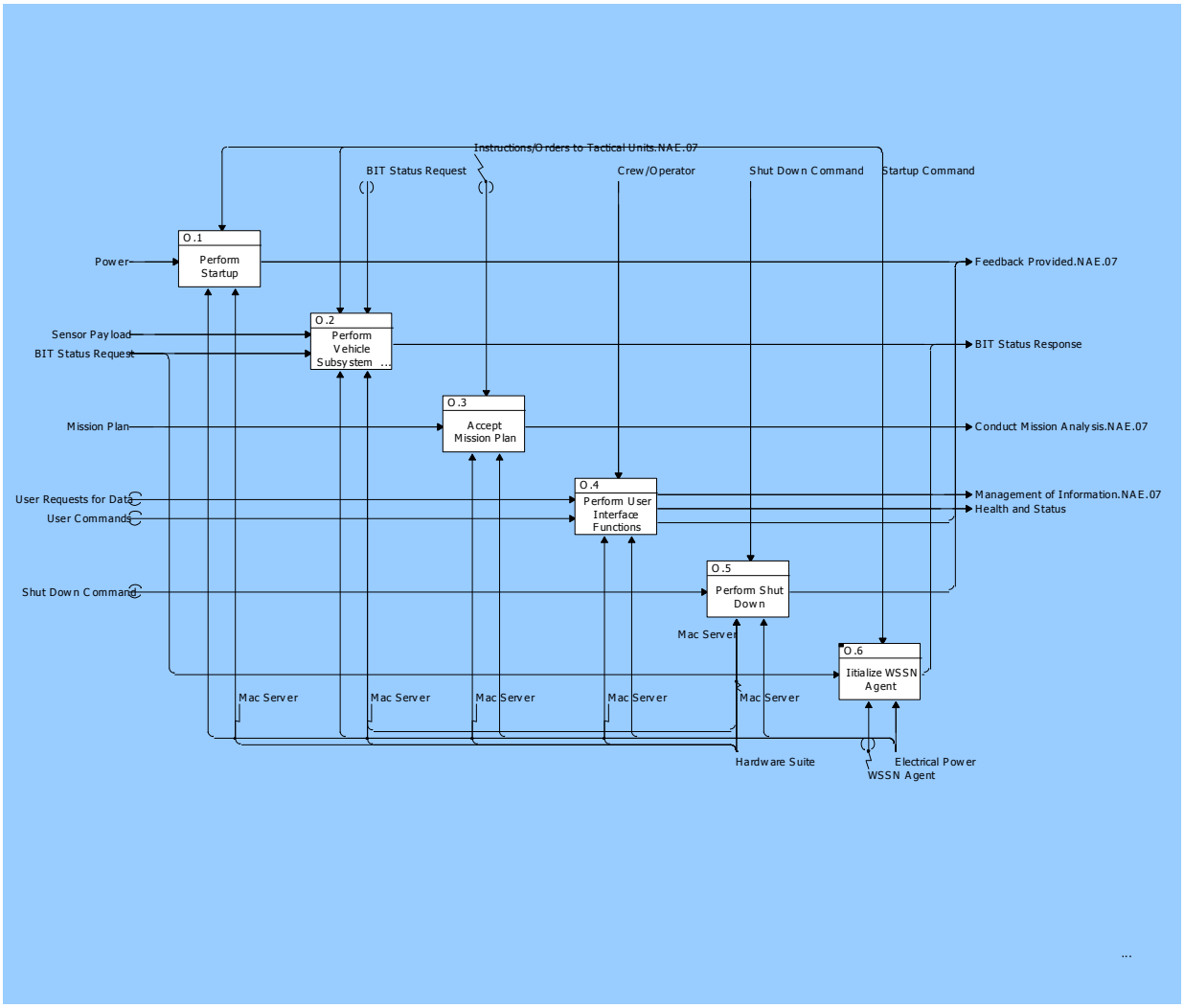

Figure 45 Perform Overhead Functions IDEF0 Diagram

O.1 Perform Startup [UUV-FCN-0022]

Description:

Upon receipt of a power on command, the Mission system shall be initialized within 1 minute.

Duration: (Script: Mission Sim Time Initialization Logic)

Block: Set Mission Time

SimTime := SimulatorPropertyQuery ("time")

MissionStartTime := Assignment (SimTime)

duration := Assignment (5)

EndBlock

Return (duration)

Allocated To:
HW.1 Mac Server
P Electrical Power

Table 56 O.1 Perform Startup Interfacing Items

Interfacing Items	Source / Destination
Feedback Provided.NAE.07	Triggers Function(s): 1.2 Determine Contact Presence Output From: 1.1 Monitor Domain O Perform Overhead Functions [UUV-FCN-0020] O.1 Perform Startup [UUV-FCN-0022] O.4 Perform User Interface Functions O.5 Perform Shut Down [UUV-FCN-0058]
Power [UUV-ITM-0004]	Input To: O Perform Overhead Functions [UUV-FCN-0020] O.1 Perform Startup [UUV-FCN-0022]
Startup Command [UUV-ITM-0006]	Triggers Function(s): O Perform Overhead Functions [UUV-FCN-0020] O.1 Perform Startup [UUV-FCN-0022] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] O.6 Initialize WSSN Agent O.6.1.1 Perform Diagnostics

O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]

Description:
Upon receipt of a platform subsystem BIT command, the Mission system platform shall conduct a Built-In-Test, and report the results

Allocated To:
HW.1 Mac Server
P Electrical Power

Table 57 O.2 Perform Vehicle Subsystem BIT Interfacing Items

Interfacing Items	Source / Destination
BIT Status Request [UUV-ITM-0007]	Input To: O Perform Overhead Functions [UUV-FCN-0020] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] O.6 Initialize WSSN Agent O.6.1.1 Perform Diagnostics

Table 57 O.2 Perform Vehicle Subsystem BIT Interfacing Items

Interfacing Items	Source / Destination
	Triggers Function(s): O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]
BIT Status Response [UUV-ITM-0015]	Input To: 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage Output From: O Perform Overhead Functions [UUV-FCN-0020] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] O.6 Initialize WSSN Agent O.6.3 Enter WSSN Tasking Order Receive Mode
Sensor Payload [UUV-ITM-0005]	Input To: O Perform Overhead Functions [UUV-FCN-0020] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]
Startup Command [UUV-ITM-0006]	Triggers Function(s): O Perform Overhead Functions [UUV-FCN-0020] O.1 Perform Startup [UUV-FCN-0022] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] O.6 Initialize WSSN Agent O.6.1.1 Perform Diagnostics

O.3 Accept Mission Plan [UUV-FCN-0024]

Description:
The Mission System shall accept and store a mission plan for the maximum possible mission duration.

Allocated To:
HW.1 Mac Server
P Electrical Power

Table 58 O.3 Accept Mission Plan Interfacing Items

Interfacing Items	Source / Destination
Conduct Mission Analysis.NAE.07	Output From: O Perform Overhead Functions [UUV-FCN-0020] O.3 Accept Mission Plan [UUV-FCN-0024]
Instructions/Orders to Tactical Units.NAE.07	Triggers Function(s): O.3 Accept Mission Plan [UUV-FCN-0024]

Table 58 O.3 Accept Mission Plan Interfacing Items

Interfacing Items	Source / Destination
Mission Plan [UUV-ITM-0002]	Input To: O Perform Overhead Functions [UUV-FCN-0020] O.3 Accept Mission Plan [UUV-FCN-0024]

O.4 Perform User Interface Functions

Allocated To:
HW.1 Mac Server
P Electrical Power

Table 59 O.4 Perform User Interface Functions Interfacing Items

Interfacing Items	Source / Destination
Crew/Operator	Triggers Function(s): 0 Enhance Domain Awareness 1.5 Manage Video Collection 3.4.2 Evaluate Threat.NAE.07 3.4.3 Alert Generation.NAE.07 O Perform Overhead Functions [UUV-FCN-0020] O.4 Perform User Interface Functions
Feedback Provided.NAE.07	Triggers Function(s): 1.2 Determine Contact Presence Output From: 1.1 Monitor Domain O Perform Overhead Functions [UUV-FCN-0020] O.1 Perform Startup [UUV-FCN-0022] O.4 Perform User Interface Functions O.5 Perform Shut Down [UUV-FCN-0058]
Health and Status [UUV-ITM-0014]	Output From: O Perform Overhead Functions [UUV-FCN-0020] O.4 Perform User Interface Functions
Management of Information.NAE.07	Output From: O Perform Overhead Functions [UUV-FCN-0020] O.4 Perform User Interface Functions
User Commands	Input To: 0 Enhance Domain Awareness 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.3 Alert Generation.NAE.07

Table 59 O.4 Perform User Interface Functions Interfacing Items

Interfacing Items	Source / Destination
	O.4 Perform User Interface Functions
User Requests for Data	Input To: 0 Enhance Domain Awareness 1.0 Detect 1.5 Manage Video Collection 3.0 Classify (Conduct Behavior Analysis) 3.4 Perform I&W 3.4.2 Evaluate Threat.NAE.07 O.4 Perform User Interface Functions Triggers Function(s): 1.0 Detect 1.1 Monitor Domain 1.2 Determine Contact Presence 1.3 Collect Video Data 1.4 Store Video Data

O.5 Perform Shut Down [UUV-FCN-0058]

Allocated To:
HW.1 Mac Server
P Electrical Power

Table 60 O.5 Perform Shut Down Interfacing Items

Interfacing Items	Source / Destination
Feedback Provided.NAE.07	Triggers Function(s): 1.2 Determine Contact Presence Output From: 1.1 Monitor Domain O Perform Overhead Functions [UUV-FCN-0020] O.1 Perform Startup [UUV-FCN-0022] O.4 Perform User Interface Functions O.5 Perform Shut Down [UUV-FCN-0058]
Shut Down Command [UUV-ITM-0009]	Input To: O.5 Perform Shut Down [UUV-FCN-0058] Triggers Function(s): O Perform Overhead Functions [UUV-FCN-0020] O.5 Perform Shut Down [UUV-FCN-0058]

O.6 Initialize WSSN Agent

Allocated To:
P Electrical Power
S.2 WSSN Agent

Table 61 O.6 Initialize WSSN Agent Interfacing Items

Interfacing Items	Source / Destination
BIT Status Request [UUV-ITM-0007]	Input To: O Perform Overhead Functions [UUV-FCN-0020] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] O.6 Initialize WSSN Agent O.6.1.1 Perform Diagnostics Triggers Function(s): O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]
BIT Status Response [UUV-ITM-0015]	Input To: 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage Output From: O Perform Overhead Functions [UUV-FCN-0020] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] O.6 Initialize WSSN Agent O.6.3 Enter WSSN Tasking Order Receive Mode
Startup Command [UUV-ITM-0006]	Triggers Function(s): O Perform Overhead Functions [UUV-FCN-0020] O.1 Perform Startup [UUV-FCN-0022] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] O.6 Initialize WSSN Agent O.6.1.1 Perform Diagnostics

5 Functional Behavior Model

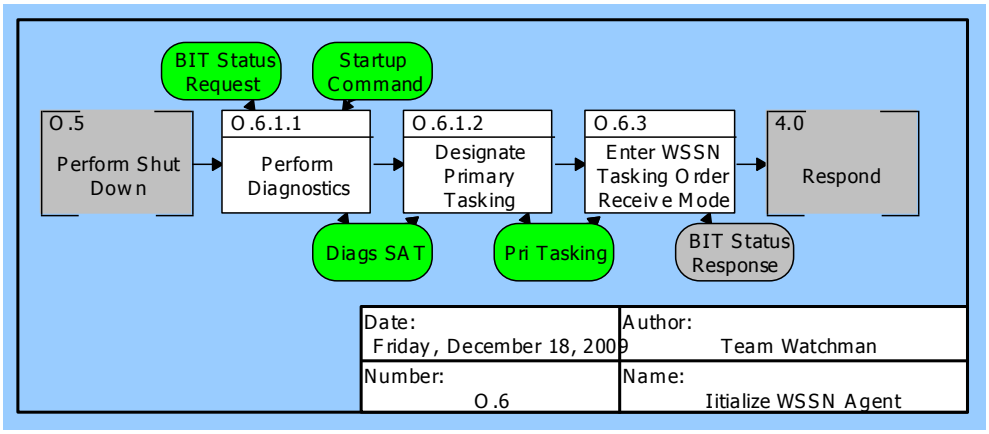

Figure 46 Initialize WSSN Agent Enhanced FFBD

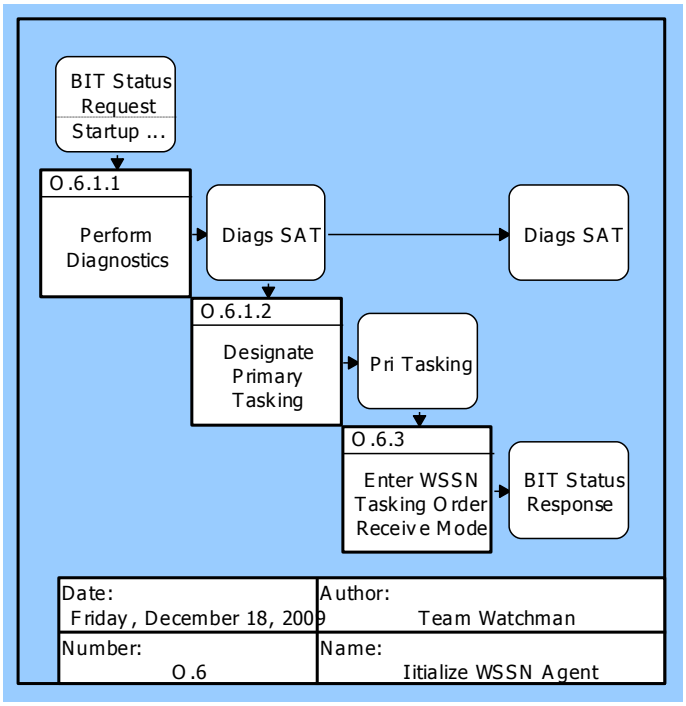

Figure 47 Initialize WSSN Agent N2 Diagram

5 Functional Behavior Model

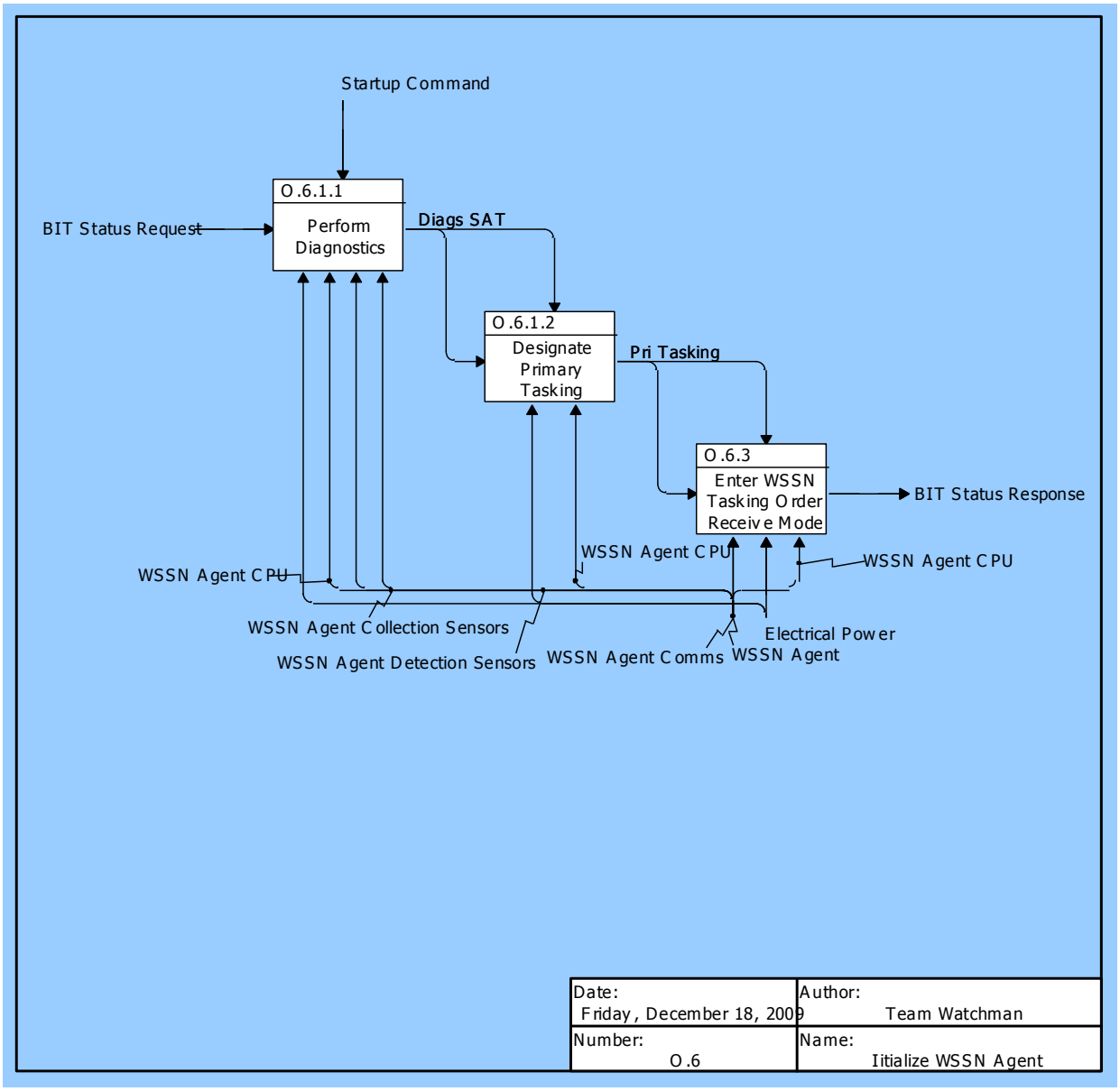

Figure 48 Initialize WSSN Agent IDEF0 Diagram

O.6.1.1 Perform Diagnostics

Allocated To:

P Electrical Power
S.2.1 WSSN Agent CPU
S.2.2 WSSN Agent Collection Sensors
S.2.3 WSSN Agent Detection Sensors

Table 62 O.6.1.1 Perform Diagnostics Interfacing Items

Interfacing Items	Source / Destination
BIT Status Request [UUV-ITM-0007]	Input To: O Perform Overhead Functions [UUV-FCN-0020] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] O.6 Initialize WSSN Agent O.6.1.1 Perform Diagnostics Triggers Function(s): O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]
Diags SAT	Input To: 4.2.2.1 Determine Own Battery Voltage O.6.1.2 Designate Primary Tasking Triggers Function(s): O.6.1.2 Designate Primary Tasking Output From: O.6.1.1 Perform Diagnostics
Startup Command [UUV-ITM-0006]	Triggers Function(s): O Perform Overhead Functions [UUV-FCN-0020] O.1 Perform Startup [UUV-FCN-0022] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] O.6 Initialize WSSN Agent O.6.1.1 Perform Diagnostics

O.6.1.2 Designate Primary Tasking

Allocated To:
P Electrical Power
S.2.1 WSSN Agent CPU

Table 63 O.6.1.2 Designate Primary Tasking Interfacing Items

Interfacing Items	Source / Destination
Diags SAT	Input To: 4.2.2.1 Determine Own Battery Voltage O.6.1.2 Designate Primary Tasking Triggers Function(s): O.6.1.2 Designate Primary Tasking Output From: O.6.1.1 Perform Diagnostics

Table 63 O.6.1.2 Designate Primary Tasking Interfacing Items

Interfacing Items	Source / Destination
Pri Tasking	Input To: O.6.3 Enter WSSN Tasking Order Receive Mode Triggers Function(s): O.6.3 Enter WSSN Tasking Order Receive Mode Output From: O.6.1.2 Designate Primary Tasking

O.6.3 Enter WSSN Tasking Order Receive Mode

Allocated To:
- P Electrical Power
- S.2.1 WSSN Agent CPU
- S.2.4 WSSN Agent Comms

Table 64 O.6.3 Enter WSSN Tasking Order Receive Mode Interfacing Items

Interfacing Items	Source / Destination
BIT Status Response [UUV-ITM-0015]	Input To: 4.2.2 Get Battery Voltages 4.2.2.1 Determine Own Battery Voltage Output From: O Perform Overhead Functions [UUV-FCN-0020] O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] O.6 Initialize WSSN Agent O.6.3 Enter WSSN Tasking Order Receive Mode
Pri Tasking	Input To: O.6.3 Enter WSSN Tasking Order Receive Mode Triggers Function(s): O.6.3 Enter WSSN Tasking Order Receive Mode Output From: O.6.1.2 Designate Primary Tasking

6 Item Dictionary

B BAM Items

Description:
Data Items which are output from the Behavior analysis algorithms

Item Type: Digital

B.1 Observed Sequence Array

Description:
The observed behavior sequence that is derived from sensor data, which is processed by a contact tracking function and provided to the BAM in a readable format

Input To:
3.2.3 Build Production Matrix

Output From:
3.3.1 Classify Normal

B.2 Stored Behavior Array

Description:
Any number of normal or abnormal behaviors which have been determined for the particular environment that are used to compare against observed behaviors for behavior pattern recognition

Input To:
3.2.3 Build Production Matrix
3.2.4 Build Cost Matrix

Output From:
3.2.2 Read Stored Behavior Sequences

B.3 Production Matrix Array

Description:
The MATLAB array that is created as a result of an observed sequence being transformed into any number of defined stored behavior sequences using finite state machines for the purposes of cost calculation for behavior recognition

Input To:
3.2.4 Build Cost Matrix
3.2.5 Calculate Costs

Output From:
3.2.3 Build Production Matrix

B.4 Cost Matrix Array

Description:
The MATLAB array that is created via a relative distance calculation in order to determine the amount of variation of an observed sequence from a defined sequence

Input To:
3.2.5 Calculate Costs

3.3 Perform Contact Classification
3.3.1 Classify Normal
3.3.2 Classify Abnormal
3.3.3 Classify Unknown

Output From:
3.2 Analyze Behavior
3.2.4 Build Cost Matrix

B.5 Behavior Cost Thresholds

Description:
Those limits which have been set in the code (or ultimately will be user-defined either manually or via automation) that determine if a behavior sequence cost is too high to be associated with any defined behavior. If it is within thresholds, then the behavior will be classified as either Normal or Abnormal, depending upon the cost. If it is outside the threshold, then it will be classified as Unknown

Input To:
3.3 Perform Contact Classification
3.3.1 Classify Normal
3.3.2 Classify Abnormal
3.3.3 Classify Unknown

Output From:
3.2 Analyze Behavior
3.2.5 Calculate Costs

B.6 Defined Threat Behavior

Description:
Behavior which has been classified as Abnormal or Unknown by the BAM

Input To:
3.4.2 Evaluate Threat.NAE.07

Output From:
3.4.1 Perform Situational Analysis and Assessment

CT.0 Control Elements

CT.1 Crew/Operator

Triggers:
0 Enhance Domain Awareness
1.5 Manage Video Collection
3.4.2 Evaluate Threat.NAE.07
3.4.3 Alert Generation.NAE.07
O Perform Overhead Functions [UUV-FCN-0020]
O.4 Perform User Interface Functions

6 Item Dictionary

CT.1.1 User Commands

Input To:
- 0 Enhance Domain Awareness
- 1.5 Manage Video Collection
- 3.0 Classify (Conduct Behavior Analysis)
- 3.4 Perform I&W
- 3.4.3 Alert Generation.NAE.07
- O.4 Perform User Interface Functions

CT.1.2 User Requests for Data

Input To:
- 0 Enhance Domain Awareness
- 1.0 Detect
- 1.5 Manage Video Collection
- 3.0 Classify (Conduct Behavior Analysis)
- 3.4 Perform I&W
- 3.4.2 Evaluate Threat.NAE.07
- O.4 Perform User Interface Functions

Triggers:
- 1.0 Detect
- 1.1 Monitor Domain
- 1.2 Determine Contact Presence
- 1.3 Collect Video Data
- 1.4 Store Video Data

CT.2 Instructions/Orders to Tactical Units.NAE.07

Description:
Order received by tactical unit.

Item Type: Trigger

Triggers:
O.3 Accept Mission Plan [UUV-FCN-0024]

Source Document(s):
PEO IWS.NAE.07

CT.3 Approved Orders.NAE.07

Description:
An officially accepted communication which conveys instructions from a superior to a subordinate. (See order JP 1-02)

Item Type: Trigger

Source Document(s):
SPAWAR.NAE.07

6 Item Dictionary

CT.4 Collect Sensor Data.NAE.07

Description:
Accumulate target detection and/or tracking data from one or more sensors

Item Type: Event

Input To:
1.0 Detect
1.3 Collect Video Data

Transferred By Interface Link:
L.3 Sensor Product Link
L.6.1 MBAM HW-SW Link

Source Document(s):
Charleston ISR.NAE.07

CT.5 Sensor Coverage Assignments Assigned.NAE.07

Description:
An indication that sensor coverage assignments have bee communicated

Item Type: Trigger

Input To:
1.0 Detect
1.1 Monitor Domain
1.2 Determine Contact Presence
1.3 Collect Video Data

Output From:
1.5 Manage Video Collection

Transferred By Interface Link:
L.2 Command Link

Source Document(s):
NAVSEA.NAE.07

CT.6 Process Signals/Sensor Data.NAE.07

Description:
Given signals, process signals to filter noise, countermeasures, and clutter, improve signal-to-interference ratio, amplify, or otherwise improve signals for reception, retransmission, or conversion to more tactically descriptive and useful information.

Item Type: Event

Size: Normal (μ: 100.0, stdDev: 5.0, stream: 1)

Size Units: MBps

Input To:
3.1 Read Contact Data Files

Triggers:

6 Item Dictionary

1.3 Collect Video Data
2.0 Track
2.1 Read Video Data
2.2 Process Video Data

Output From:
1.2 Determine Contact Presence

Transferred By Interface Link:
L.4 Product Delivery Link
L.6 MBAM Intranet
L.6.1 MBAM HW-SW Link
L.6.2 MBAM Behavior Analysis Link

Source Document(s):
NAVSEA, SPAWAR.NAE.07

I.0 Infrastructure Elements

Input To:
1.0 Detect
1.1 Monitor Domain
1.2 Determine Contact Presence
1.3 Collect Video Data
1.4 Store Video Data

Output From:
1.5 Manage Video Collection

I.1 Power [UUV-ITM-0004]

Input To:
O Perform Overhead Functions [UUV-FCN-0020]
O.1 Perform Startup [UUV-FCN-0022]

I.2 Startup Command [UUV-ITM-0006]

Triggers:
O Perform Overhead Functions [UUV-FCN-0020]
O.1 Perform Startup [UUV-FCN-0022]
O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]
O.6 Initialize WSSN Agent
O.6.1.1 Perform Diagnostics

I.3 Shut Down Command [UUV-ITM-0009]

Input To:
O.5 Perform Shut Down [UUV-FCN-0058]

Triggers:
O Perform Overhead Functions [UUV-FCN-0020]
O.5 Perform Shut Down [UUV-FCN-0058]

6 Item Dictionary

I.4 BIT Status Request [UUV-ITM-0007]

Input To:
- O Perform Overhead Functions [UUV-FCN-0020]
- O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]
- O.6 Initialize WSSN Agent
- O.6.1.1 Perform Diagnostics

Triggers:
- O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]

I.5 BIT Status Response [UUV-ITM-0015]

Input To:
- 4.2.2 Get Battery Voltages
- 4.2.2.1 Determine Own Battery Voltage

Output From:
- O Perform Overhead Functions [UUV-FCN-0020]
- O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]
- O.6 Initialize WSSN Agent
- O.6.3 Enter WSSN Tasking Order Receive Mode

I.6 Health and Status [UUV-ITM-0014]

Output From:
- O Perform Overhead Functions [UUV-FCN-0020]
- O.4 Perform User Interface Functions

I.7 Feedback Provided.NAE.07

Description:
A message or indicator confirming that feedback has been generated and delivered.

Item Type: Trigger

Triggers:
- 1.2 Determine Contact Presence

Output From:
- 1.1 Monitor Domain
- O Perform Overhead Functions [UUV-FCN-0020]
- O.1 Perform Startup [UUV-FCN-0022]
- O.4 Perform User Interface Functions
- O.5 Perform Shut Down [UUV-FCN-0058]

Source Document(s):
MDA.NAE.07

I.8 Management of Information.NAE.07

Description:

The authoritative development and control of collection, processing, exploitation, and/or reporting requirements of information to support the assigned mission. (See information management JP 1-02,)

Item Type: Event

Output From:
O Perform Overhead Functions [UUV-FCN-0020]
O.4 Perform User Interface Functions

Source Document(s):
FORCEnet.NAE.07

M.0 Mission Data [UUV-ITM-0001]

Decomposed into Lower-Level Item(s):
M.1 Mission Plan [UUV-ITM-0002]
M.1.1 Sensor Payload [UUV-ITM-0005]
Environment Map Data
Processed Video Data
Stored Behavior Files
Target Track Files
Video Data
Video Data Files

Input To:
0 Enhance Domain Awareness
3.0 Classify (Conduct Behavior Analysis)
3.2 Analyze Behavior
3.2.2 Read Stored Behavior Sequences
3.2.3 Build Production Matrix
3.4.1 Perform Situational Analysis and Assessment

M.0.1 Conduct Mission Analysis.NAE.07

Description:
Examine and determine potential outcomes for an assigned operational task

Item Type: Event

Output From:
O Perform Overhead Functions [UUV-FCN-0020]
O.3 Accept Mission Plan [UUV-FCN-0024]

Source Document(s):
MDA.NAE.07

M.1 Mission Plan [UUV-ITM-0002]

Decomposes:
M.0 Mission Data [UUV-ITM-0001]

Input To:
O Perform Overhead Functions [UUV-FCN-0020]

O.3 Accept Mission Plan [UUV-FCN-0024]

M.1.1 Sensor Payload [UUV-ITM-0005]

Decomposes:
M.0 Mission Data [UUV-ITM-0001]

Input To:
O Perform Overhead Functions [UUV-FCN-0020]
O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]

M.1.2 Disseminated Intelligence.NAE.07

Description:
Intelligence data delivered to users in suitable form.

Item Type: Trigger

Input To:
0 Enhance Domain Awareness
3.0 Classify (Conduct Behavior Analysis)
3.2 Analyze Behavior
3.2.2 Read Stored Behavior Sequences
3.4.1 Perform Situational Analysis and Assessment

Source Document(s):
NAVSEA.NAE.07

M.1.3 Encryption and Control Parameters

M.4 EW Mission Data

M.5 EO-IR Mission Data

Triggers:
2.3 Build Contact Track

Output From:
1.0 Detect
1.4 Store Video Data
2.2 Process Video Data

O.2.1 Requested Information.NAE.07

Description:
Asked for information will be sent

Item Type: Trigger

Output From:
3.0 Classify (Conduct Behavior Analysis)
3.4 Perform I&W
3.4.3 Alert Generation.NAE.07

Transferred By Interface Link:
L.4 Product Delivery Link
L.6 MBAM Intranet
L.6.1 MBAM HW-SW Link

Source Document(s):
PEO IWS.NAE.07

Agent at COI Zone

Triggers:
4.3.2 Detect COI

Output From:
4.3.1 Navigate to COI Zone

Alert Message.NAE.07

Description:
A communication in speech, writing, or signals denoting 1. A warning signal of a real or threatened danger.2. a summon to prepare for action. 3. A warning received by a unit or headquarters which forewarns of an impending operational mission. (See Alert JP 1-02)

Item Type: Event

Size: 2.0

Size Units: MB

Triggers:
4.0 Respond
4.1 Task WSSN
4.1.1 Receive WSSN Tasking Order Data from Watchman Server

Output From:
3.0 Classify (Conduct Behavior Analysis)
3.4 Perform I&W
3.4.3 Alert Generation.NAE.07

Transferred By Interface Link:
L.4 Product Delivery Link
L.6 MBAM Intranet
L.6.1 MBAM HW-SW Link
L.6.4 MBAM Alert Generation Link

Source Document(s):
PEO IWS.NAE.07

Analysis Request

Item Type: Trigger

Triggers:
3.0 Classify (Conduct Behavior Analysis)
3.1 Read Contact Data Files

3.2 Analyze Behavior
3.2.1 Read Observed Sequence
3.2.2 Read Stored Behavior Sequences
3.2.3 Build Production Matrix
3.2.4 Build Cost Matrix
3.2.5 Calculate Costs

Transferred By Interface Link:
L.1 Request Link
L.6 MBAM Intranet
L.6.1 MBAM HW-SW Link

Assign Track Category.NAE.07

Description:
Given a track, assign a track category using predetermined categorization procedures.

Item Type: Event

Size: Normal (μ: 5.0, stdDev: 0.5, stream: 1)

Size Units: MB

Input To:
3.4 Perform I&W
3.4.1 Perform Situational Analysis and Assessment

Output From:
3.3 Perform Contact Classification
3.3.1 Classify Normal
3.3.2 Classify Abnormal
3.3.3 Classify Unknown

Transferred By Interface Link:
L.5 Watchman Network Link
L.6 MBAM Intranet
L.6.1 MBAM HW-SW Link
L.6.3 MBAM Contact Classification Link

Source Document(s):
NAVSEA.NAE.07

Assistance Message.NAE.07

Description:
Information expressed in plain or encrypted language and prepared in a format suitable for transmission by any means of communication used to accomplish or support operations.

Item Type: Trigger

Source Document(s):
PEO IWS.NAE.07

6 Item Dictionary

COI Color Data

Input To:
- 4.4 Respond to WSSN Tasking Order
- 4.4.1 Generate WSSN Tasking Order Response

Output From:
- 4.3.4.2 Collect COI Color

COI Image Data

Input To:
- 4.4 Respond to WSSN Tasking Order
- 4.4.1 Generate WSSN Tasking Order Response

Output From:
- 4.3.4.1 Collect COI Image

COI in Range

Triggers:
- 4.3.4 Collect COI Data
- 4.3.4.1 Collect COI Image
- 4.3.4.2 Collect COI Color
- 4.3.4.3 Collect COI Video

Output From:
- 4.3.3 Maneuver to COI

COI Video Data

Output From:
- 4.3.4.3 Collect COI Video

Contact Detected

Item Type: Digital

Triggers:
- 4.3.3 Maneuver to COI

Output From:
- 4.3.2 Detect COI

Transferred By Interface Link:
- L.7 WSSN Agent Link

Contact Position

Item Type: Digital

Input To:
- 4.3 Execute WSSN Tasking Order
- 4.3.1 Navigate to COI Zone

Output From:
4.2 Process Tasking Order
4.2.1 Receive WSSN Tasking Order from WSSN C2

Transferred By Interface Link:
L.7 WSSN Agent Link

Data Collection Complete

Triggers:
4.4 Respond to WSSN Tasking Order
4.4.1 Generate WSSN Tasking Order Response

Output From:
4.3 Execute WSSN Tasking Order
4.3.4 Collect COI Data
4.3.4.1 Collect COI Image
4.3.4.2 Collect COI Color

Diags SAT

Input To:
4.2.2.1 Determine Own Battery Voltage
O.6.1.2 Designate Primary Tasking

Triggers:
O.6.1.2 Designate Primary Tasking

Output From:
O.6.1.1 Perform Diagnostics

Transferred By Interface Link:
L.7 WSSN Agent Link

Environment Map Data

Decomposes:
M.0 Mission Data [UUV-ITM-0001]

Input To:
3.2 Analyze Behavior
3.2.5 Calculate Costs

Output From:
3.1 Read Contact Data Files

Establish Communications Link.NAE.07

Description:
Start or set up communications facilities between two points

Item Type: Event

Size: Normal (μ: 10.0, stdDev: 1.0, stream: 1)

Size Units: milliseconds

Transferred By Interface Link:
L.6 MBAM Intranet
L.12 Subscription Service Link

Source Document(s):
PEO IWS.NAE.07

Format Alert Message.NAE.07

Description:
To structure or organize information in relation to readiness for action, defense, or protection in a form suitable for transmission by desired means of communication.

Item Type: Event

Size: Normal (μ: 10.0, stdDev: 1.0, stream: 1)

Size Units: MBps

Output From:
3.4.3 Alert Generation.NAE.07

Transferred By Interface Link:
L.6 MBAM Intranet
L.6.1 MBAM HW-SW Link
L.6.4 MBAM Alert Generation Link

Source Document(s):
PEO IWS.NAE.07

Generate Predictive Analysis Products.NAE.07

Description:
Using threat evaluation information, produce forecast guidance/analysis

Item Type: Event

Size: Normal (μ: 10.0, stdDev: 1.0, stream: 1)

Size Units: MBps

Transferred By Interface Link:
L.4 Product Delivery Link
L.6 MBAM Intranet
L.6.1 MBAM HW-SW Link

Source Document(s):
Charleston ISR.NAE.07

Generate Sensor Coverage/Assignments.NAE.07

Description:
Given geographical areas and volumes to be sensed, environmental conditions, sensor-platform capabilities, and expected enemy behavior, determine the number and placement of sensors to provide needed coverage.

6 Item Dictionary

Item Type: Event

Source Document(s):
NAVSEA.NAE.07
FORCEnet.NAE.07

Other Battery Voltage

Input To:
4.2.2.4 Compare Battery Voltages
4.2.3 Determine Task Agent

Triggers:
4.2.2.4 Compare Battery Voltages

Output From:
4.2.2 Get Battery Voltages
4.2.2.3 Receive Battery Voltage from Other Agent

Other Battery Voltage Received

Triggers:
4.2.2.3 Receive Battery Voltage from Other Agent
4.2.3 Determine Task Agent

Other Battery Voltage SAT

Output From:
4.2.2.3 Receive Battery Voltage from Other Agent

Own Battery Voltage

Input To:
4.2.2.2 Send Own Battery Voltage to Other Agent
4.2.2.4 Compare Battery Voltages
4.2.3 Determine Task Agent

Output From:
4.2.2 Get Battery Voltages
4.2.2.1 Determine Own Battery Voltage

Own Battery Voltage SAT

Triggers:
4.2.2.2 Send Own Battery Voltage to Other Agent

Own Battery Voltage Sent

Input To:
4.2.2.3 Receive Battery Voltage from Other Agent

Output From:
4.2.2.2 Send Own Battery Voltage to Other Agent

6 Item Dictionary

Prepare Alert Message.NAE.07

Description:
.Generate a message to forewarn, call to standby or prepare for action

Item Type: Event

Size: Normal (μ: 10.0, stdDev: 1.0, stream: 1)

Size Units: MBps

Output From:
3.4.3 Alert Generation.NAE.07

Transferred By Interface Link:
L.6 MBAM Intranet
L.6.1 MBAM HW-SW Link
L.6.4 MBAM Alert Generation Link

Source Document(s):
PEO IWS.NAE.07

Processed Video Data

Decomposes:
M.0 Mission Data [UUV-ITM-0001]

Input To:
2.3 Build Contact Track

Output From:
2.2 Process Video Data

Receive Alert Message.NAE.07

Description:
Recognize and take delivery of alert message

Item Type: Trigger

Transferred By Interface Link:
L.5 Watchman Network Link
L.6 MBAM Intranet

Source Document(s):
PEO IWS.NAE.07

Required Data Type

Item Type: Digital

Input To:
4.3 Execute WSSN Tasking Order
4.3.4 Collect COI Data
4.3.4.1 Collect COI Image
4.3.4.2 Collect COI Color

4.3.4.3 Collect COI Video

Triggers:
4.2.2 Get Battery Voltages
4.2.2.1 Determine Own Battery Voltage

Output From:
4.2 Process Tasking Order
4.2.1 Receive WSSN Tasking Order from WSSN C2

Transferred By Interface Link:
L.7 WSSN Agent Link

Sensor Data Sent to C2 System.NAE.07

Description:
Sensor information transmitted to C2 systems.

Item Type: Trigger

Units: GB

Size: Normal (μ: 10000.0, stdDev: 100.0, stream: 1)

Size Units: GB

Transferred By Interface Link:
L.3 Sensor Product Link
L.6 MBAM Intranet

Source Document(s):
NAVSEA.NAE.07
PEO IWS.NAE.07

Stored Behavior Files

Decomposes:
M.0 Mission Data [UUV-ITM-0001]

Input To:
3.2 Analyze Behavior
3.2.2 Read Stored Behavior Sequences

Output From:
3.1 Read Contact Data Files
3.2.1 Read Observed Sequence

Target Track Data

Description:
Target track sequence which is built into text files via MS SQL Server database queries of database entries derived from the time/date stamped processed video files using the MATLAB/SIMULINK "Blob Tracker" software

Item Type: Digital

Input To:

3.0 Classify (Conduct Behavior Analysis)
3.1 Read Contact Data Files

Output From:
2.0 Track
2.3 Build Contact Track

Target Track Files

Decomposes:
M.0 Mission Data [UUV-ITM-0001]

Input To:
3.2 Analyze Behavior
3.2.1 Read Observed Sequence

Output From:
3.1 Read Contact Data Files

Task Agent Designation

Item Type: Digital

Triggers:
4.3 Execute WSSN Tasking Order
4.3.1 Navigate to COI Zone

Output From:
4.2.2.4 Compare Battery Voltages
4.2.3 Determine Task Agent

Transferred By Interface Link:
L.7 WSSN Agent Link

Threat Evaluation.NAE.07

Description:
Examine all available information concerning a threat to determine potential courses of action.

Item Type: Event

Size: 10.0

Size Units: MB

Triggers:
3.3 Perform Contact Classification
3.3.1 Classify Normal
3.3.2 Classify Abnormal
3.3.3 Classify Unknown
3.4 Perform I&W
3.4.3 Alert Generation.NAE.07

Output From:
3.2 Analyze Behavior
3.2.5 Calculate Costs

3.4.2 Evaluate Threat.NAE.07

Transferred By Interface Link:
L.6 MBAM Intranet
L.6.1 MBAM HW-SW Link
L.6.2 MBAM Behavior Analysis Link

Source Document(s):
Charleston ISR.NAE.07

Threat ID Determined.NAE.07

Description:
Threat has been recognized.

Item Type: Trigger

Transferred By Interface Link:
L.5 Watchman Network Link
L.6 MBAM Intranet
L.6.1 MBAM HW-SW Link
L.6.3 MBAM Contact Classification Link

Source Document(s):
NAVSEA.NAE.07

Threat Not Negated.NAE.07

Description:
Message indicating threat not destroyed or made ineffective

Item Type: Trigger

Triggers:
3.4.2 Evaluate Threat.NAE.07

Output From:
3.4.1 Perform Situational Analysis and Assessment

Source Document(s):
NAVSEA.NAE.07

Track confirmed to be Target of Interest.NAE.07

Description:
An indication that track is a confirmed target of interest.

Item Type: Trigger

Triggers:
3.4 Perform I&W
3.4.1 Perform Situational Analysis and Assessment

Output From:
3.3 Perform Contact Classification
3.3.2 Classify Abnormal

3.3.3 Classify Unknown

Transferred By Interface Link:
L.6 MBAM Intranet
L.6.1 MBAM HW-SW Link
L.6.3 MBAM Contact Classification Link

Source Document(s):
NAVSEA.NAE.07

Track Determined to be Threat.NAE.07

Description:
A series of related contacts displayed on a data display console or other display device that has been ascertained to be something likely or having the intention to cause harm.

Item Type: Trigger

Input To:
3.4.3 Alert Generation.NAE.07

Output From:
3.4.2 Evaluate Threat.NAE.07

Source Document(s):
NAVSEA.NAE.07

Track Formation.NAE.07

Description:
Given local and remote sensors and systems, create and maintain tracks and assign track numbers.

Item Type: Event

Source Document(s):
NAVSEA.NAE.07

Track(s) Initiated.NAE.07

Description:
To begin to display or record the successive positions of a moving object.

Item Type: Trigger

Source Document(s):
NAVSEA.NAE.07

Ultra-Sonic Sensor Data

Input To:
4.3.2 Detect COI
4.3.3 Maneuver to COI

Video Data

Description:

Raw video data which is collected by the WiLife Logitech IP camera network (Watchman Camera Network) and packeted into Windows Media File format files by the WiLife COTS SW package

Item Type: Digital

Decomposes:
M.0 Mission Data [UUV-ITM-0001]

Input To:
1.4 Store Video Data
2.0 Track
2.1 Read Video Data

Output From:
1.0 Detect
1.3 Collect Video Data

Video Data Files

Decomposes:
M.0 Mission Data [UUV-ITM-0001]

Input To:
2.2 Process Video Data

Output From:
2.1 Read Video Data

Watchman IP Comms Request

Input To:
4.1.1 Receive WSSN Tasking Order Data from Watchman Server

WSSN Agent Posit

Input To:
4.3.1 Navigate to COI Zone

WSSN C2 Comms Request

Triggers:
4.4.3 Receive WSSN Tasking Order Response from WSSN

Output From:
4.4.2 Send WSSN Tasking Order Response to WSSN C2

WSSN Comms Request

Triggers:
4.2 Process Tasking Order
4.2.1 Receive WSSN Tasking Order from WSSN C2

6 Item Dictionary

WSSN Task Order Response Data

Input To:
- Ext.1 Analyze WSSN Tasking Order Response Data

Output From:
- 4.0 Respond
- 4.4 Respond to WSSN Tasking Order
- 4.4.4 Process WSSN Tasking Order Response

WSSN Tasking Order

Item Type: Digital

Input To:
- 4.2 Process Tasking Order
- 4.2.1 Receive WSSN Tasking Order from WSSN C2

Output From:
- 4.1 Task WSSN
- 4.1.3 Send WSSN Tasking Order to WSSN

Transferred By Interface Link:
- L.10 WSSN Agent Comms Link

WSSN Tasking Order Data

Item Type: Digital

Input To:
- 4.0 Respond
- 4.1 Task WSSN
- 4.1.2 Generate WSSN Tasking Order
- 4.1.3 Send WSSN Tasking Order to WSSN

Output From:
- 3.0 Classify (Conduct Behavior Analysis)

Transferred By Interface Link:
- L.0 Watchman LAN

WSSN Tasking Order Data Received

Triggers:
- 4.1.2 Generate WSSN Tasking Order

Output From:
- 4.1.1 Receive WSSN Tasking Order Data from Watchman Server

WSSN Tasking Order Ready for Send

Triggers:
- 4.1.3 Send WSSN Tasking Order to WSSN

Output From:

4.1.2 Generate WSSN Tasking Order

WSSN Tasking Order Response

Item Type: Digital

Input To:
- 4.4.2 Send WSSN Tasking Order Response to WSSN C2
- 4.4.3 Receive WSSN Tasking Order Response from WSSN
- 4.4.4 Process WSSN Tasking Order Response

Output From:
- 4.4.1 Generate WSSN Tasking Order Response

Transferred By Interface Link:
- L.10 WSSN Agent Comms Link

WSSN Tasking Order Response Ready to Send

Triggers:
- 4.4.2 Send WSSN Tasking Order Response to WSSN C2

Output From:
- 4.4.1 Generate WSSN Tasking Order Response

WSSN Tasking Order Response Received

Triggers:
- 4.4.4 Process WSSN Tasking Order Response

Output From:
- 4.4.3 Receive WSSN Tasking Order Response from WSSN

7 Resources

R.1 Server Processor

Description:
Capacity of the software to process the data which is input to it

Amount Type: Float

Initial Amount: 1000.0

Maximum Amount: 1000.0

Amount Units: Mbps

Captured By:
3.2 Analyze Behavior
Acquire Available: true
Amount: Normal (μ: 200.0, stdDev: 50.0, stream: 1)

3.3 Perform Contact Classification
Acquire Available: true
Amount: Normal (μ: 100.0, stdDev: 25.0, stream: 1)

3.3.1 Classify Normal
Acquire Available: true
Amount: Normal (μ: 100.0, stdDev: 25.0, stream: 1)

3.4 Perform I&W
Acquire Available: true
Amount: Normal (μ: 100.0, stdDev: 20.0, stream: 1)

3.4.1 Perform Situational Analysis and Assessment
Acquire Available: true
Amount: Normal (μ: 250.0, stdDev: 50.0, stream: 1)

3.4.2 Evaluate Threat.NAE.07
Acquire Available: true
Amount: Normal (μ: 100.0, stdDev: 15.0, stream: 1)

3.4.3 Alert Generation.NAE.07
Acquire Available: true
Amount: 10.0

R.3 WSSN Processor

Description:
Capacity of the WSSN CPU to process the instructions and data sent to it.

Amount Type: Float

Initial Amount: 1000.0

Maximum Amount: 1000.0

7 Resources

Amount Units: MIPS

Consumed By:

4.1 Task WSSN
Acquire Available: true
Amount: Normal (μ: 750.0, stdDev: 150.0, stream: 1)

4.2.1 Receive WSSN Tasking Order from WSSN C2
Acquire Available: true
Amount: Normal (μ: 100.0, stdDev: 20.0, stream: 1)

4.3.1 Navigate to COI Zone
Acquire Available: true
Amount: Normal (μ: 750.0, stdDev: 150.0, stream: 1)

4.3.4 Collect COI Data
Acquire Available: true
Amount: Normal (μ: 750.0, stdDev: 150.0, stream: 1)

4.4.2 Send WSSN Tasking Order Response to WSSN C2
Acquire Available: true
Amount: Normal (μ: 750.0, stdDev: 150.0, stream: 1)

8 Components

Part I - Component List

B Behavior Analysis Module
B.1 BAM Behavior Analyzer
B.2 BAM Contact Classifier
B.3 BAM Alert Generator
C.1 Watchman Maritime Smart Environment (WMSE) System Context
C.2 Tactical Customers
C.3 External Customers
C.4 User Validation Service
Context.0 Watchman WSSN System Context
HW Hardware Suite
HW.1 Mac Server
HW.2 Mac Cinema Displays
HW.3 (Dell PC) Camera Node Command Center
HW.4 IP Camera Network
P Electrical Power
S Software Suite
S.1 MATLAB
S.1.2 Distribution Service
S.1.2 WSSN C2 Node Comms
S.1.3 Subscription Service
S.2 MATLAB/SIMULINK
S.2 WSSN Agent
S.2.1 WSSN Agent CPU
S.2.2 WSSN Agent Collection Sensors
S.2.2.1 Image Sensor
S.2.2.2 Color Sensor
S.2.3 WSSN Agent Detection Sensors
S.2.4 WSSN Agent Comms
S.2.5 WSSN Motors
S.3 MS ACCESS
S.3.1 Data Management System (DMS)
S.4 MS SQL SERVER
S.5 WILIFE COTS SW
T Tracking Module
T.1 Blob Tracker
T.2 Face Detection

Part II - Component Definitions

8 Components

B Behavior Analysis Module

Description:
Hardware and software that executes the behavior analysis function

Type: System

Built In Higher-Level Component(s):
Context.0 Watchman WSSN System Context

Built From Lower-Level Component(s):
B.1 BAM Behavior Analyzer
B.2 BAM Contact Classifier
B.3 BAM Alert Generator

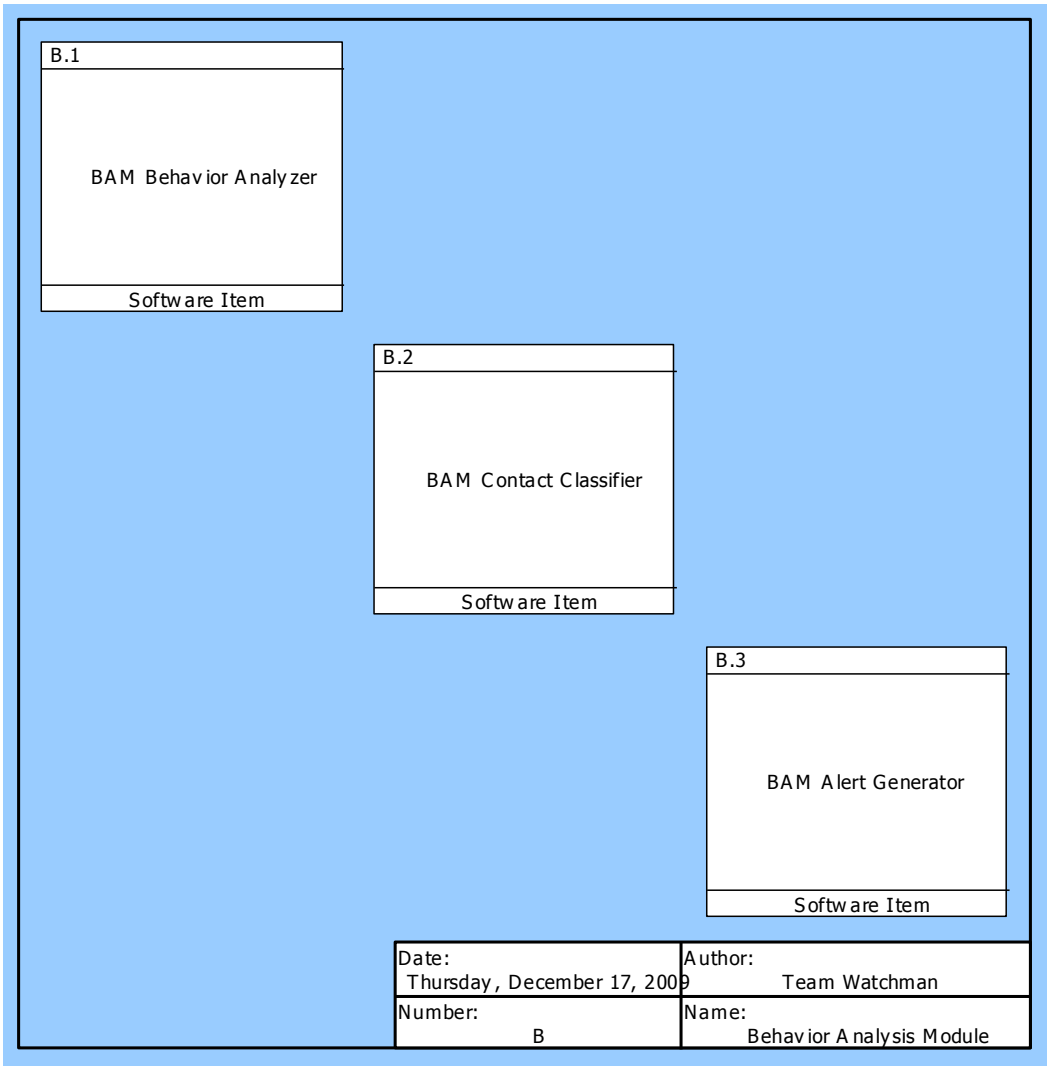

Figure 49 Behavior Analysis Module Subcomponent Connectivity

Performs Function(s):
3.0 Classify (Conduct Behavior Analysis)

8 Components

B.1 BAM Behavior Analyzer

Description:
Software Module that Compares the observed behavior with the stored behavior models.

Type: Software Item

Built In Higher-Level Component(s):
B Behavior Analysis Module

Performs Function(s):
3.2 Analyze Behavior
3.2.1 Read Observed Sequence
3.2.2 Read Stored Behavior Sequences
3.2.3 Build Production Matrix
3.2.4 Build Cost Matrix
3.2.5 Calculate Costs

B.2 BAM Contact Classifier

Description:
Classifies contacts as hostile, neutral, or unknown, based upon abnormal, normal, or unknown behavior

Type: Software Item

Built In Higher-Level Component(s):
B Behavior Analysis Module

B.3 BAM Alert Generator

Description:
Generates Alerts based upon contact classification

Type: Software Item

Built In Higher-Level Component(s):
B Behavior Analysis Module

C.1 Watchman Maritime Smart Environment (WMSE) System Context

Type: Network

Built In Higher-Level Component(s):
Context.0 Watchman WSSN System Context

Built From Lower-Level Component(s):
C.2 Tactical Customers
C.3 External Customers
C.4 User Validation Service

Connected through Physical Link(s):
L.1 Request Link
L.4 Product Delivery Link
L.13 User Validation (Subscriber)

8 Components

L.14 External Distribution Services

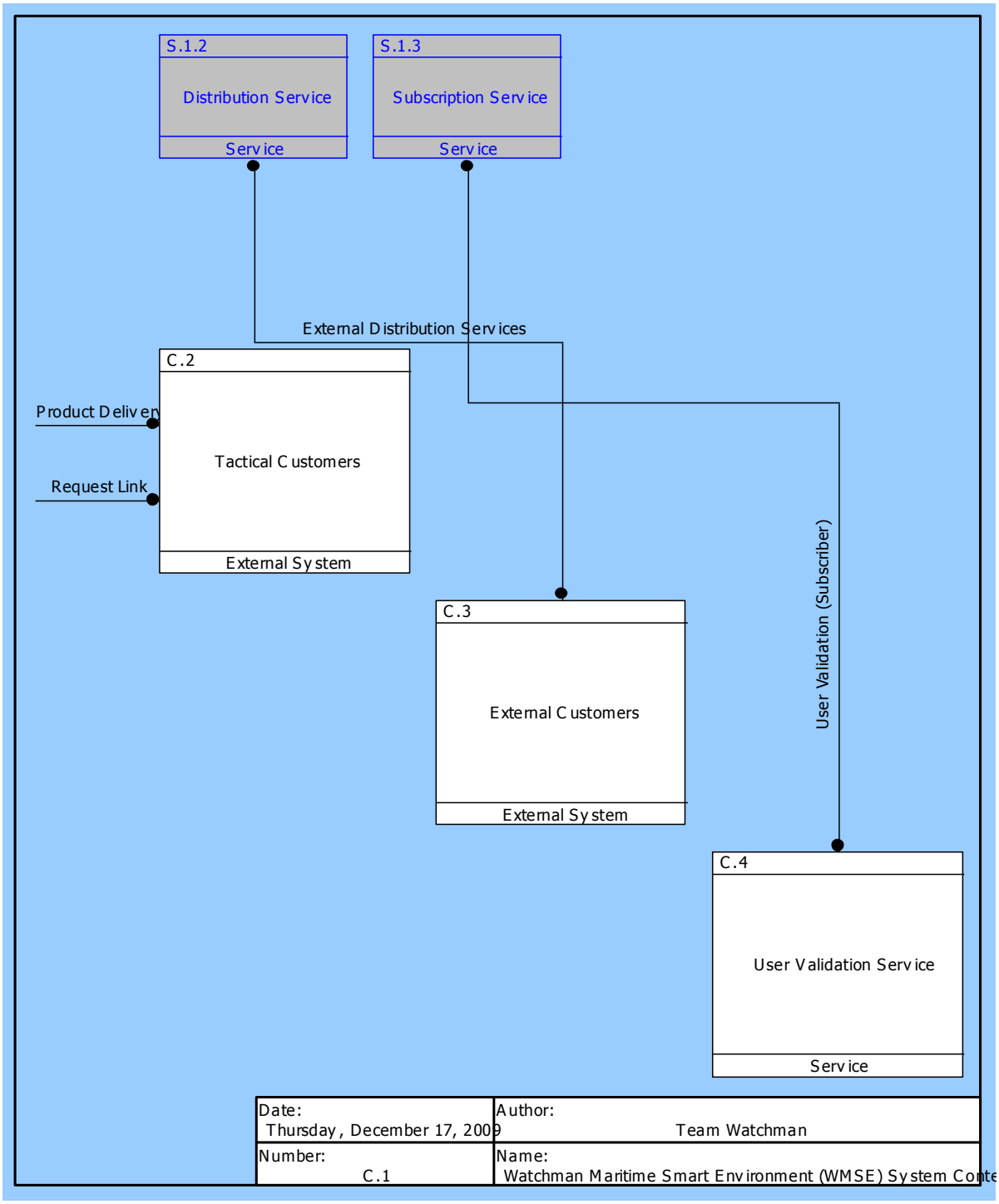

Figure 50 Watchman Maritime Smart Environment (WMSE) System Context Subcomponent Connectivity

C.2 Tactical Customers

Description:
In this model, Tactical Customers serve as the sources for behavior analysis requests and are the recipients of those products and alerts generated through their request.

Type: External System

Built In Higher-Level Component(s):
C.1 Watchman Maritime Smart Environment (WMSE) System Context

Connected to Physical Link(s):
L.1 Request Link
L.4 Product Delivery Link

C.3 External Customers

Description:
External customers are those that use the services to access products.

Type: External System

Built In Higher-Level Component(s):
C.1 Watchman Maritime Smart Environment (WMSE) System Context

Connected to Physical Link(s):
L.14 External Distribution Services

C.4 User Validation Service

Description:
The User Validation Service receives user credentials and returns user validation status and access rights.

Type: Service

Built In Higher-Level Component(s):
C.1 Watchman Maritime Smart Environment (WMSE) System Context

Connected to Physical Link(s):
L.13 User Validation (Subscriber)

Context.0 Watchman WSSN System Context

Built From Lower-Level Component(s):
B Behavior Analysis Module
C.1 Watchman Maritime Smart Environment (WMSE) System Context
HW Hardware Suite
P Electrical Power
S Software Suite
S.2 WSSN Agent
T Tracking Module

Connected through Physical Link(s):
L.0 Watchman LAN

8 Components

L.1 Request Link
L.4 Product Delivery Link
L.7 WSSN Agent Link
L.13 User Validation (Subscriber)
L.14 External Distribution Services

8 Components

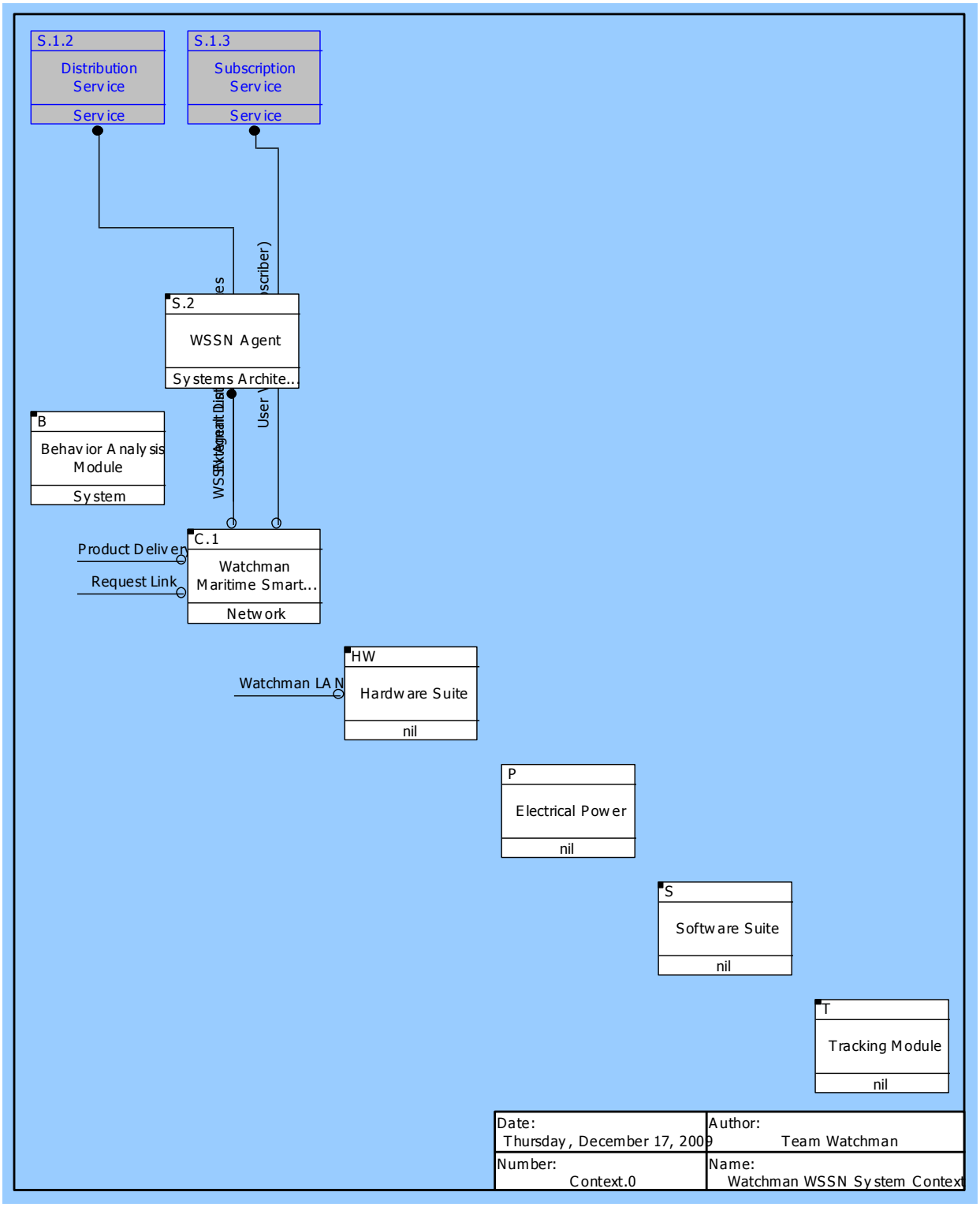

Figure 51 Watchman WSSN System Context Subcomponent Connectivity

8 Components

HW Hardware Suite

Built In Higher-Level Component(s):
Context.0 Watchman WSSN System Context

Built From Lower-Level Component(s):
HW.1 Mac Server
HW.2 Mac Cinema Displays
HW.3 (Dell PC) Camera Node Command Center
HW.4 IP Camera Network
S.1.2 WSSN C2 Node Comms

Connected through Physical Link(s):
L.0 Watchman LAN

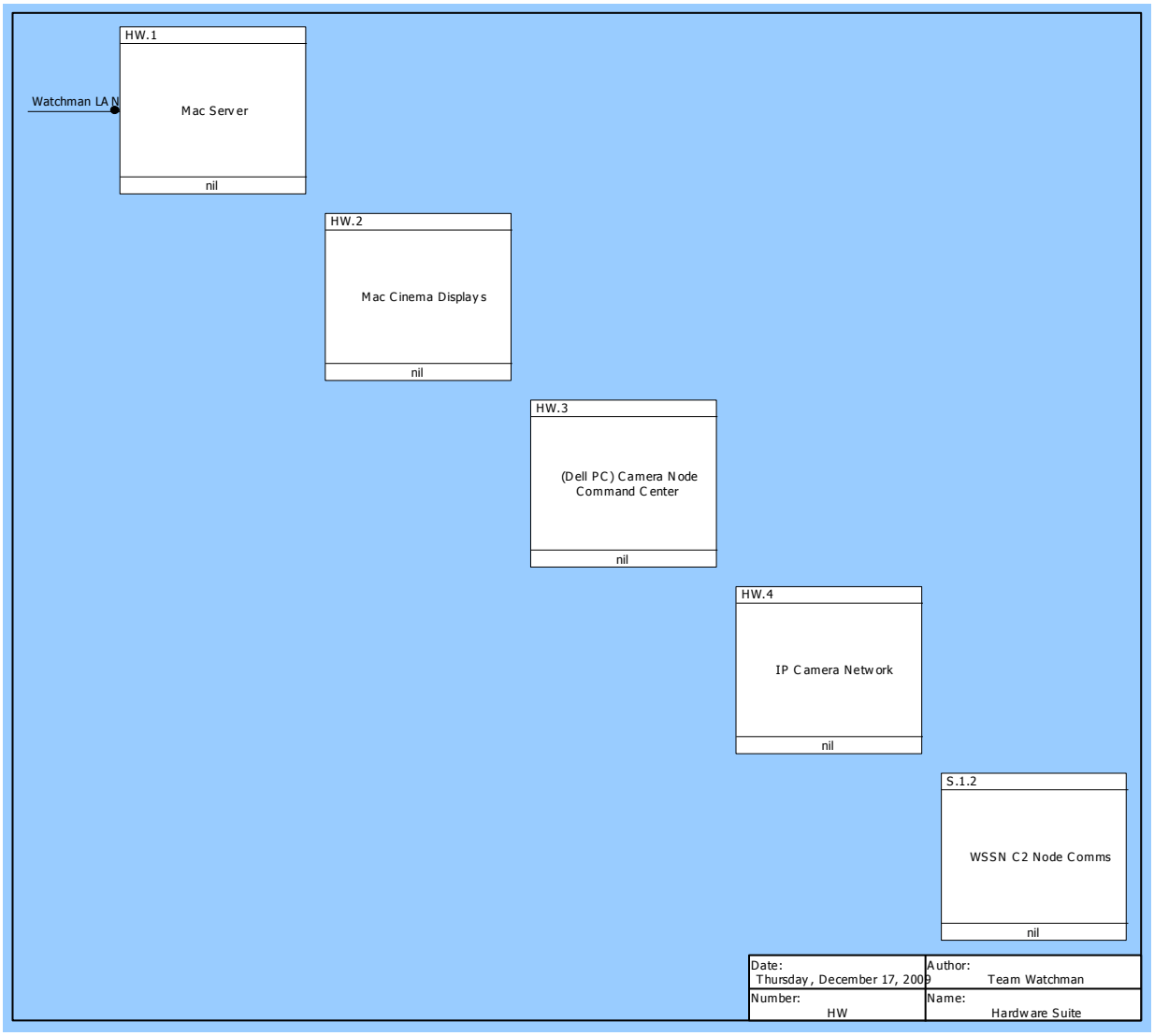

Figure 52 Hardware Suite Subcomponent Connectivity

Performs Function(s):

8 Components

O Perform Overhead Functions [UUV-FCN-0020]

HW.1 Mac Server

Built In Higher-Level Component(s):
HW Hardware Suite

Connected to Physical Link(s):
L.0 Watchman LAN

Performs Function(s):
2.0 Track
2.3 Build Contact Track
3.0 Classify (Conduct Behavior Analysis)
3.1 Read Contact Data Files
3.2 Analyze Behavior
3.2.1 Read Observed Sequence
3.2.2 Read Stored Behavior Sequences
3.2.3 Build Production Matrix
3.2.4 Build Cost Matrix
3.2.5 Calculate Costs
3.3 Perform Contact Classification
3.3.1 Classify Normal
3.3.2 Classify Abnormal
3.3.3 Classify Unknown
3.4 Perform I&W
3.4.1 Perform Situational Analysis and Assessment
3.4.2 Evaluate Threat.NAE.07
3.4.3 Alert Generation.NAE.07
O Perform Overhead Functions [UUV-FCN-0020]
O.1 Perform Startup [UUV-FCN-0022]
O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]
O.3 Accept Mission Plan [UUV-FCN-0024]
O.4 Perform User Interface Functions
O.5 Perform Shut Down [UUV-FCN-0058]

HW.2 Mac Cinema Displays

Built In Higher-Level Component(s):
HW Hardware Suite

Performs Function(s):
3.4 Perform I&W
3.4.2 Evaluate Threat.NAE.07
3.4.3 Alert Generation.NAE.07

HW.3 (Dell PC) Camera Node Command Center

Built In Higher-Level Component(s):
HW Hardware Suite

Performs Function(s):

1.0 Detect
1.4 Store Video Data
1.5 Manage Video Collection
2.0 Track
2.1 Read Video Data
2.2 Process Video Data
2.3 Build Contact Track
4.1 Task WSSN
4.1.1 Receive WSSN Tasking Order Data from Watchman Server
4.1.2 Generate WSSN Tasking Order
4.1.3 Send WSSN Tasking Order to WSSN
4.4 Respond to WSSN Tasking Order
4.4.1 Generate WSSN Tasking Order Response
4.4.2 Send WSSN Tasking Order Response to WSSN C2
4.4.3 Receive WSSN Tasking Order Response from WSSN
4.4.4 Process WSSN Tasking Order Response

HW.4 IP Camera Network

Built In Higher-Level Component(s):
HW Hardware Suite

Performs Function(s):
1.0 Detect
1.1 Monitor Domain
1.2 Determine Contact Presence
1.3 Collect Video Data
1.5 Manage Video Collection

P Electrical Power

Built In Higher-Level Component(s):
Context.0 Watchman WSSN System Context

Performs Function(s):
0 Enhance Domain Awareness
1.0 Detect
1.1 Monitor Domain
1.2 Determine Contact Presence
1.3 Collect Video Data
1.4 Store Video Data
1.5 Manage Video Collection
2.0 Track
2.1 Read Video Data
2.2 Process Video Data
2.3 Build Contact Track
3.0 Classify (Conduct Behavior Analysis)
3.1 Read Contact Data Files
3.1.1 Feature Extraction.NAE.07
3.2 Analyze Behavior
3.2.1 Read Observed Sequence

8 Components

3.2.2 Read Stored Behavior Sequences
3.2.3 Build Production Matrix
3.2.4 Build Cost Matrix
3.2.5 Calculate Costs
3.3 Perform Contact Classification
3.3.1 Classify Normal
3.3.2 Classify Abnormal
3.3.3 Classify Unknown
3.4 Perform I&W
3.4.1 Perform Situational Analysis and Assessment
3.4.2 Evaluate Threat.NAE.07
3.4.3 Alert Generation.NAE.07
4.0 Respond
4.1 Task WSSN
4.1.1 Receive WSSN Tasking Order Data from Watchman Server
4.1.2 Generate WSSN Tasking Order
4.1.3 Send WSSN Tasking Order to WSSN
4.2 Process Tasking Order
4.2.1 Receive WSSN Tasking Order from WSSN C2
4.2.2 Get Battery Voltages
4.2.2.1 Determine Own Battery Voltage
4.2.2.2 Send Own Battery Voltage to Other Agent
4.2.2.3 Receive Battery Voltage from Other Agent
4.2.2.4 Compare Battery Voltages
4.2.3 Determine Task Agent
4.3 Execute WSSN Tasking Order
4.3.1 Navigate to COI Zone
4.3.2 Detect COI
4.3.3 Maneuver to COI
4.3.4 Collect COI Data
4.3.4.1 Collect COI Image
4.3.4.2 Collect COI Color
4.3.4.3 Collect COI Video
4.4 Respond to WSSN Tasking Order
4.4.1 Generate WSSN Tasking Order Response
4.4.2 Send WSSN Tasking Order Response to WSSN C2
4.4.3 Receive WSSN Tasking Order Response from WSSN
4.4.4 Process WSSN Tasking Order Response
Ext.1 Analyze WSSN Tasking Order Response Data
Ext.1 SDI send WSSN Tasking Order Data
O Perform Overhead Functions [UUV-FCN-0020]
O.1 Perform Startup [UUV-FCN-0022]
O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]
O.3 Accept Mission Plan [UUV-FCN-0024]
O.4 Perform User Interface Functions
O.5 Perform Shut Down [UUV-FCN-0058]
O.6 Initialize WSSN Agent
O.6.1.1 Perform Diagnostics
O.6.1.2 Designate Primary Tasking

O.6.3 Enter WSSN Tasking Order Receive Mode

S Software Suite

Built In Higher-Level Component(s):
Context.0 Watchman WSSN System Context

Built From Lower-Level Component(s):
S.1 MATLAB
S.2 MATLAB/SIMULINK
S.3 MS ACCESS
S.4 MS SQL SERVER
S.5 WILIFE COTS SW

8 Components

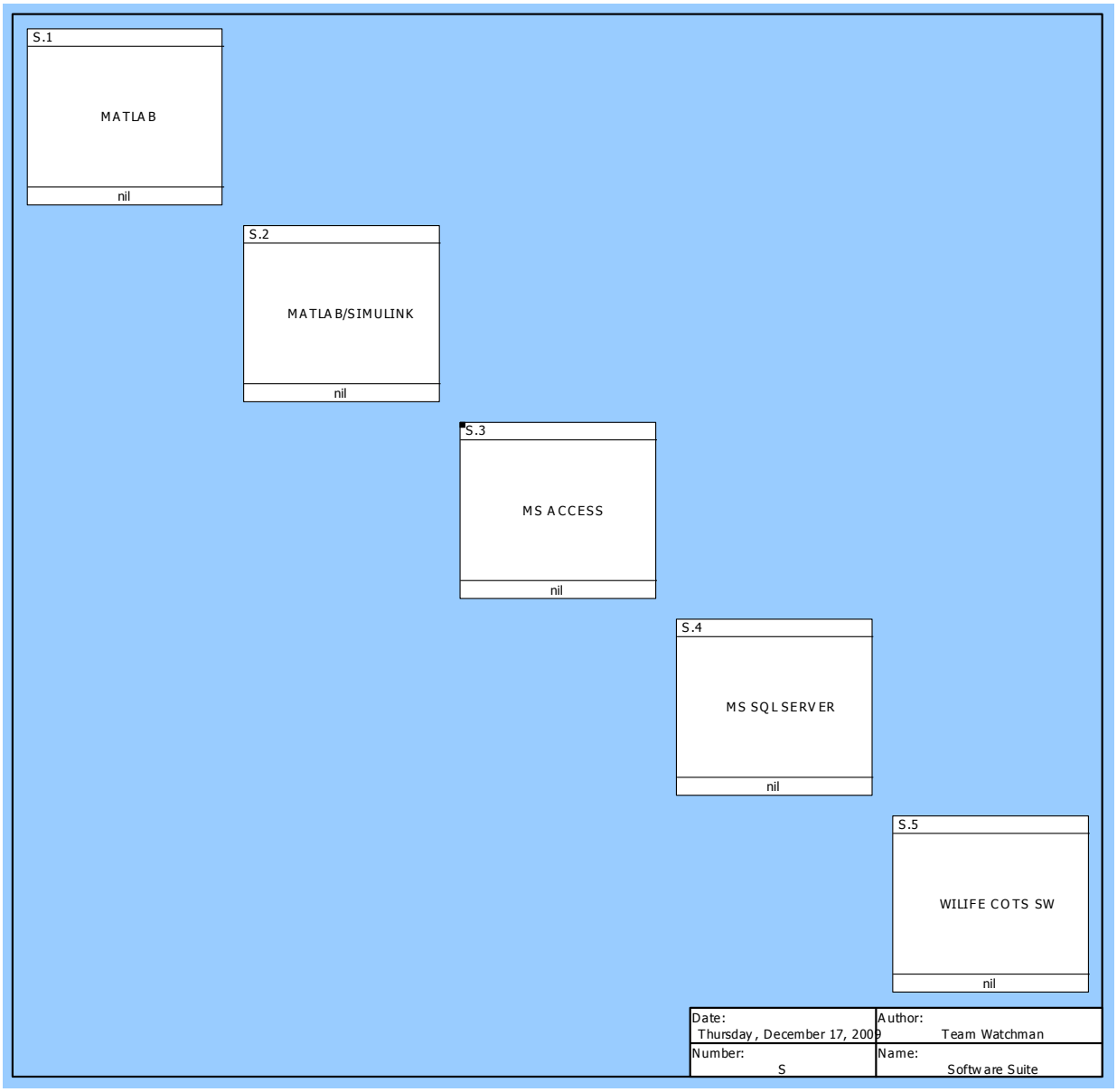

Figure 53 Software Suite Subcomponent Connectivity

Performs Function(s):
O Perform Overhead Functions [UUV-FCN-0020]

S.1 MATLAB

Built In Higher-Level Component(s):
S Software Suite

Performs Function(s):
3.0 Classify (Conduct Behavior Analysis)
3.1 Read Contact Data Files
3.1.1 Feature Extraction.NAE.07
3.2 Analyze Behavior

3.2.1 Read Observed Sequence
3.2.2 Read Stored Behavior Sequences
3.2.3 Build Production Matrix
3.2.4 Build Cost Matrix
3.2.5 Calculate Costs
3.3 Perform Contact Classification
3.3.1 Classify Normal
3.3.2 Classify Abnormal
3.3.3 Classify Unknown
3.4 Perform I&W
3.4.1 Perform Situational Analysis and Assessment

S.1.2 Distribution Service

Description:
External Distribution Service provides the mechanisms and functionality to support distribution of new products to external subscribers.

Type: Service

Connected to Physical Link(s):
L.11 Distribution Service Link
L.14 External Distribution Services

S.1.2 WSSN C2 Node Comms

Built In Higher-Level Component(s):
HW Hardware Suite

Performs Function(s):
4.1.1 Receive WSSN Tasking Order Data from Watchman Server
4.1.3 Send WSSN Tasking Order to WSSN
4.4.3 Receive WSSN Tasking Order Response from WSSN

S.1.3 Subscription Service

Description:
External Subscription Service provides the access mechanisms and functionality to support external users subscribing to distribution of new products.

Type: Service

Connected to Physical Link(s):
L.12 Subscription Service Link
L.13 User Validation (Subscriber)

S.2 MATLAB/SIMULINK

Built In Higher-Level Component(s):
S Software Suite

Performs Function(s):
2.0 Track

2.1 Read Video Data
2.2 Process Video Data
2.3 Build Contact Track

S.2 WSSN Agent

Type: Systems Architecture

Built In Higher-Level Component(s):
Context.0 Watchman WSSN System Context

Built From Lower-Level Component(s):
S.2.1 WSSN Agent CPU
S.2.2 WSSN Agent Collection Sensors
S.2.3 WSSN Agent Detection Sensors
S.2.4 WSSN Agent Comms
S.2.5 WSSN Motors

Connected to Physical Link(s):
L.7 WSSN Agent Link

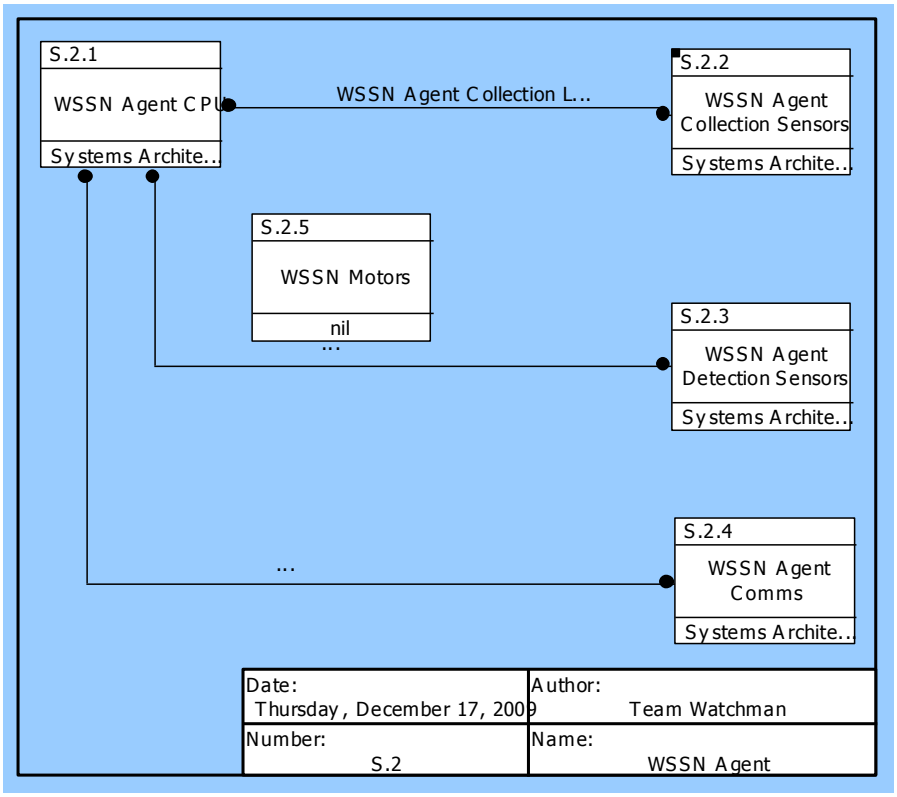

Figure 54 WSSN Agent Subcomponent Connectivity

Performs Function(s):
4.0 Respond
4.2 Process Tasking Order
4.3 Execute WSSN Tasking Order
4.4 Respond to WSSN Tasking Order

O.6 Initialize WSSN Agent

Specified By:
NCOE JIC 6.0 Ability to Create/Produce Information in an Assured Environment

S.2.1 WSSN Agent CPU

Type: Systems Architecture

Built In Higher-Level Component(s):
S.2 WSSN Agent

Connected to Physical Link(s):
L.8 WSSN Agent Detection Link
L.9 WSSN Agent Collection Link
L.10 WSSN Agent Comms Link

Performs Function(s):
4.2.1 Receive WSSN Tasking Order from WSSN C2
4.2.2.1 Determine Own Battery Voltage
4.2.2.2 Send Own Battery Voltage to Other Agent
4.2.2.3 Receive Battery Voltage from Other Agent
4.2.2.4 Compare Battery Voltages
4.2.3 Determine Task Agent
4.3.1 Navigate to COI Zone
4.3.2 Detect COI
4.3.3 Maneuver to COI
4.3.4 Collect COI Data
4.3.4.1 Collect COI Image
4.3.4.2 Collect COI Color
4.3.4.3 Collect COI Video
4.4.1 Generate WSSN Tasking Order Response
4.4.2 Send WSSN Tasking Order Response to WSSN C2
O.6.1.1 Perform Diagnostics
O.6.1.2 Designate Primary Tasking
O.6.3 Enter WSSN Tasking Order Receive Mode

Specified By:
NCOE JIC 6.1 Provide Smart Management of Collection Assets

S.2.2 WSSN Agent Collection Sensors

Type: Systems Architecture

Built In Higher-Level Component(s):
S.2 WSSN Agent

Built From Lower-Level Component(s):
S.2.2.1 Image Sensor
S.2.2.2 Color Sensor

Connected to Physical Link(s):
L.9 WSSN Agent Collection Link

8 Components

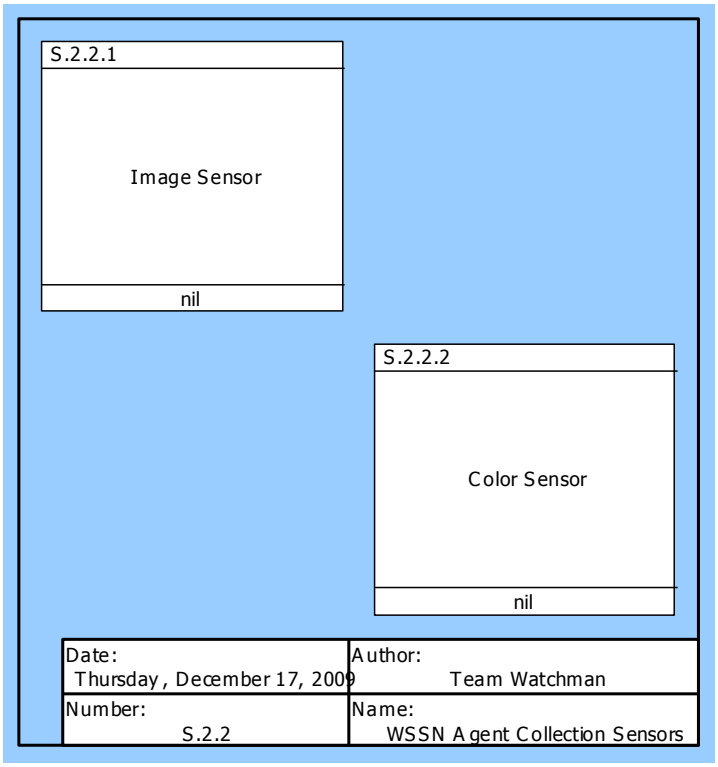

Figure 55 WSSN Agent Collection Sensors Subcomponent Connectivity

Performs Function(s):
4.3.4 Collect COI Data
O.6.1.1 Perform Diagnostics

Specified By:
NCOE JIC 16.1 Collect Sensor Data

S.2.2.1 Image Sensor

Built In Higher-Level Component(s):
S.2.2 WSSN Agent Collection Sensors

Performs Function(s):
4.3.4.1 Collect COI Image
4.3.4.3 Collect COI Video

S.2.2.2 Color Sensor

Built In Higher-Level Component(s):
S.2.2 WSSN Agent Collection Sensors

Performs Function(s):
4.3.4.2 Collect COI Color

S.2.3 WSSN Agent Detection Sensors

Type: Systems Architecture

Built In Higher-Level Component(s):
S.2 WSSN Agent

Connected to Physical Link(s):
L.8 WSSN Agent Detection Link

Performs Function(s):
4.3.1 Navigate to COI Zone
4.3.2 Detect COI
4.3.3 Maneuver to COI
O.6.1.1 Perform Diagnostics

Specified By:
NCOE JIC 7.9 Perform Intelligent Search

S.2.4 WSSN Agent Comms

Type: Systems Architecture

Built In Higher-Level Component(s):
S.2 WSSN Agent

Connected to Physical Link(s):
L.10 WSSN Agent Comms Link

Performs Function(s):
4.2.1 Receive WSSN Tasking Order from WSSN C2
4.2.2.2 Send Own Battery Voltage to Other Agent
4.2.2.3 Receive Battery Voltage from Other Agent
4.4.2 Send WSSN Tasking Order Response to WSSN C2
O.6.3 Enter WSSN Tasking Order Receive Mode

Specified By:
NCOE JIC 6.2 Transmit Information

S.2.5 WSSN Motors

Built In Higher-Level Component(s):
S.2 WSSN Agent

Performs Function(s):
4.3.1 Navigate to COI Zone
4.3.3 Maneuver to COI

S.3 MS ACCESS

Built In Higher-Level Component(s):
S Software Suite

Built From Lower-Level Component(s):
S.3.1 Data Management System (DMS)

8 Components

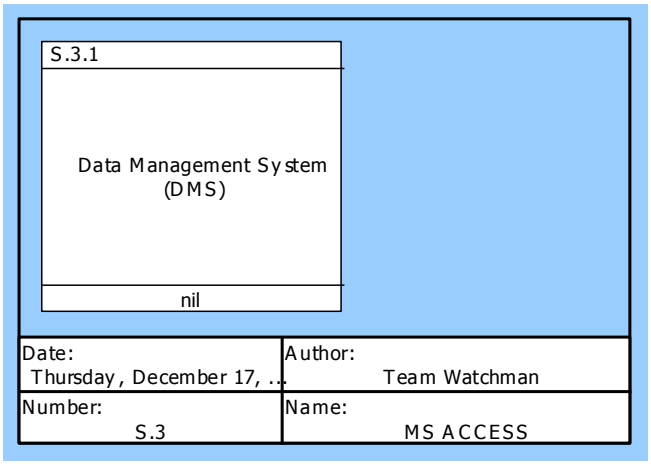

Figure 56 MS ACCESS Subcomponent Connectivity

Performs Function(s):
- 2.0 Track
- 3.1 Read Contact Data Files
- 3.4 Perform I&W
- 3.4.1 Perform Situational Analysis and Assessment
- 3.4.2 Evaluate Threat.NAE.07
- 3.4.3 Alert Generation.NAE.07

S.3.1 Data Management System (DMS)

Built In Higher-Level Component(s):
- S.3 MS ACCESS

S.4 MS SQL SERVER

Built In Higher-Level Component(s):
- S Software Suite

Performs Function(s):
- 2.0 Track
- 2.3 Build Contact Track
- 3.0 Classify (Conduct Behavior Analysis)
- 3.1 Read Contact Data Files
- 3.4 Perform I&W
- 3.4.1 Perform Situational Analysis and Assessment
- 3.4.2 Evaluate Threat.NAE.07
- 3.4.3 Alert Generation.NAE.07

S.5 WILIFE COTS SW

Built In Higher-Level Component(s):
- S Software Suite

Performs Function(s):
- 1.0 Detect
- 1.1 Monitor Domain

1.2 Determine Contact Presence
1.3 Collect Video Data
1.4 Store Video Data
1.5 Manage Video Collection

T Tracking Module

Built In Higher-Level Component(s):
Context.0 Watchman WSSN System Context

Built From Lower-Level Component(s):
T.1 Blob Tracker
T.2 Face Detection

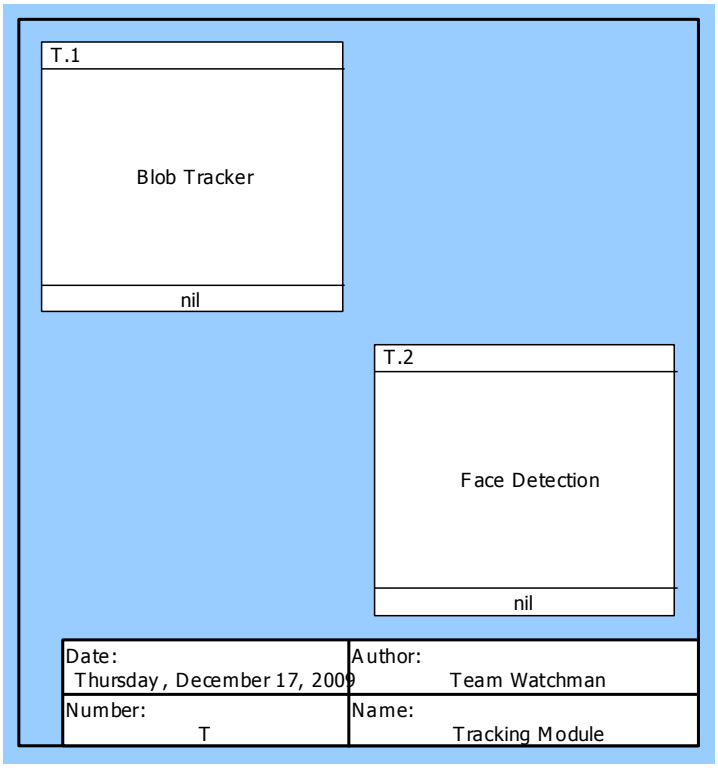

Figure 57 Tracking Module Subcomponent Connectivity

T.1 Blob Tracker

Built In Higher-Level Component(s):
T Tracking Module

Performs Function(s):
2.0 Track

T.2 Face Detection

Built In Higher-Level Component(s):
T Tracking Module

9 Interfaces

Part I - Derived Functional Interfaces

Table 65 B Behavior Analysis Module External I/O

Functions	Interface Items	Interfacing Elements
3.0 Classify (Conduct Behavior Analysis)	→ Alert Message.NAE.07	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	→ WSSN Tasking Order Data	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.2 Generate WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.1.2 Generate WSSN Tasking Order P Electrical Power 4.1.3 Send WSSN Tasking Order to WSSN HW.3 (Dell PC) Camera Node

9 Interfaces

Table 65 B Behavior Analysis Module External I/O

Functions	Interface Items	Interfacing Elements
		Command Center 4.1.3 Send WSSN Tasking Order to WSSN P Electrical Power 4.1.3 Send WSSN Tasking Order to WSSN S.1.2 WSSN C2 Node Comms
	← Target Track Data	2.0 Track S.4 MS SQL SERVER 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track P Electrical Power 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track T.1 Blob Tracker 2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER

Table 66 B.1 BAM Behavior Analyzer External I/O

Functions	Interface Items	Interfacing Elements
3.2 Analyze Behavior	→ Behavior Cost Thresholds	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification

9 Interfaces

Table 66 B.1 BAM Behavior Analyzer External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
	→ Cost Matrix Array	3.2.5 Calculate Costs HW.1 Mac Server 3.2.5 Calculate Costs P Electrical Power 3.2.5 Calculate Costs S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal

9 Interfaces

Table 66 B.1 BAM Behavior Analyzer External I/O

Functions	Interface Items	Interfacing Elements
		S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
	→ Threat Evaluation.NAE.07	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB 3.4 Perform I&W

9 Interfaces

Table 66 B.1 BAM Behavior Analyzer External I/O

Functions	Interface Items	Interfacing Elements
		HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← Environment Map Data	3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← Stored Behavior Files	3.2.1 Read Observed Sequence HW.1 Mac Server 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files

9 Interfaces

Table 66 B.1 BAM Behavior Analyzer External I/O

Functions	Interface Items	Interfacing Elements
		S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER 3.2.1 Read Observed Sequence P Electrical Power 3.2.1 Read Observed Sequence S.1 MATLAB
	← Target Track Files	3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
3.2.1 Read Observed Sequence	→ Stored Behavior Files	3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.2 Read Stored Behavior Sequences HW.1 Mac Server 3.2.2 Read Stored Behavior Sequences P Electrical Power 3.2.2 Read Stored Behavior Sequences S.1 MATLAB
	← Target Track Files	3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power

9 Interfaces

Table 66 B.1 BAM Behavior Analyzer External I/O

Functions	Interface Items	Interfacing Elements
		3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
3.2.2 Read Stored Behavior Sequences	→ Stored Behavior Array	3.2.3 Build Production Matrix HW.1 Mac Server 3.2.3 Build Production Matrix P Electrical Power 3.2.3 Build Production Matrix S.1 MATLAB 3.2.4 Build Cost Matrix HW.1 Mac Server 3.2.4 Build Cost Matrix P Electrical Power 3.2.4 Build Cost Matrix S.1 MATLAB
	← Stored Behavior Files	3.2.1 Read Observed Sequence HW.1 Mac Server 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER 3.2.1 Read Observed Sequence P Electrical Power 3.2.1 Read Observed Sequence S.1 MATLAB
3.2.3 Build Production Matrix	→ Production Matrix Array	3.2.4 Build Cost Matrix HW.1 Mac Server 3.2.4 Build Cost Matrix P Electrical Power

9 Interfaces

Table 66 B.1 BAM Behavior Analyzer External I/O

Functions	Interface Items	Interfacing Elements
		3.2.4 Build Cost Matrix S.1 MATLAB 3.2.5 Calculate Costs HW.1 Mac Server 3.2.5 Calculate Costs P Electrical Power 3.2.5 Calculate Costs S.1 MATLAB
	← Observed Sequence Array	3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB
	← Stored Behavior Array	3.2.2 Read Stored Behavior Sequences HW.1 Mac Server 3.2.2 Read Stored Behavior Sequences P Electrical Power 3.2.2 Read Stored Behavior Sequences S.1 MATLAB
3.2.4 Build Cost Matrix	→ Cost Matrix Array	3.2.5 Calculate Costs HW.1 Mac Server 3.2.5 Calculate Costs P Electrical Power 3.2.5 Calculate Costs S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal

9 Interfaces

Table 66 B.1 BAM Behavior Analyzer External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
	← Production Matrix Array	3.2.3 Build Production Matrix HW.1 Mac Server 3.2.3 Build Production Matrix P Electrical Power 3.2.3 Build Production Matrix S.1 MATLAB
	← Stored Behavior Array	3.2.2 Read Stored Behavior Sequences HW.1 Mac Server 3.2.2 Read Stored Behavior Sequences P Electrical Power 3.2.2 Read Stored Behavior Sequences S.1 MATLAB
3.2.5 Calculate Costs	→ Behavior Cost Thresholds	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server

9 Interfaces

Table 66 B.1 BAM Behavior Analyzer External I/O

Functions	Interface Items	Interfacing Elements
		3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
	→ Threat Evaluation.NAE.07	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power

9 Interfaces

Table 66 B.1 BAM Behavior Analyzer External I/O

Functions	Interface Items	Interfacing Elements
		3.3.3 Classify Unknown S.1 MATLAB 3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← Cost Matrix Array	3.2.4 Build Cost Matrix S.1 MATLAB 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.4 Build Cost Matrix HW.1 Mac Server 3.2.4 Build Cost Matrix P Electrical Power
	← Environment Map Data	3.1 Read Contact Data Files HW.1 Mac Server

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Table 66 B.1 BAM Behavior Analyzer External I/O

Functions	Interface Items	Interfacing Elements
		3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← Production Matrix Array	3.2.3 Build Production Matrix HW.1 Mac Server 3.2.3 Build Production Matrix P Electrical Power 3.2.3 Build Production Matrix S.1 MATLAB

Table 67 HW Hardware Suite External I/O

Functions	Interface Items	Interfacing Elements
O Perform Overhead Functions [UUV-FCN-0020]	→ BIT Status Response [UUV-ITM-0015]	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.1 Determine Own Battery Voltage P Electrical Power 4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU
	→ Feedback Provided.NAE.07	1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW

Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
2.0 Track	→ Target Track Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) P Electrical Power 3.0 Classify (Conduct Behavior

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Video Data	1.3 Collect Video Data P Electrical Power 1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data S.5 WILIFE COTS SW
2.3 Build Contact Track	→ Target Track Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis)

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← EO-IR Mission Data	1.4 Store Video Data P Electrical Power 1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.4 Store Video Data HW.3 (Dell PC) Camera Node Command Center 1.4 Store Video Data S.5 WILIFE COTS SW 2.2 Process Video Data HW.3 (Dell PC) Camera Node Command Center 2.2 Process Video Data P Electrical Power 2.2 Process Video Data S.2 MATLAB/SIMULINK
	← Processed Video Data	2.2 Process Video Data

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		HW.3 (Dell PC) Camera Node Command Center 2.2 Process Video Data P Electrical Power 2.2 Process Video Data S.2 MATLAB/SIMULINK
3.0 Classify (Conduct Behavior Analysis)	→ Alert Message.NAE.07	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	→ WSSN Tasking Order Data	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.2 Generate WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.1.2 Generate WSSN Tasking Order

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power 4.1.3 Send WSSN Tasking Order to WSSN HW.3 (Dell PC) Camera Node Command Center 4.1.3 Send WSSN Tasking Order to WSSN P Electrical Power 4.1.3 Send WSSN Tasking Order to WSSN S.1.2 WSSN C2 Node Comms
	← Target Track Data	2.0 Track T.1 Blob Tracker 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track P Electrical Power 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track S.4 MS SQL SERVER 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
3.1 Read Contact Data Files	→ Environment Map Data	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.2.5 Calculate Costs S.1 MATLAB
	→ Stored Behavior Files	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.2 Read Stored Behavior Sequences B.1 BAM Behavior Analyzer 3.2.2 Read Stored Behavior Sequences P Electrical Power 3.2.2 Read Stored Behavior Sequences S.1 MATLAB
	→ Target Track Files	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.1 Read Observed Sequence B.1 BAM Behavior Analyzer 3.2.1 Read Observed Sequence P Electrical Power 3.2.1 Read Observed Sequence S.1 MATLAB
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		S.5 WILIFE COTS SW
	← Target Track Data	2.0 Track T.1 Blob Tracker 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track P Electrical Power 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track S.4 MS SQL SERVER 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
3.2 Analyze Behavior	→ Behavior Cost Thresholds	3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		S.1 MATLAB
	→ Cost Matrix Array	3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.2.5 Calculate Costs S.1 MATLAB 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
	→ Threat Evaluation.NAE.07	3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		S.1 MATLAB 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← Environment Map Data	3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← Stored Behavior Files	3.2.1 Read Observed Sequence P Electrical Power 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER 3.2.1 Read Observed Sequence

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		B.1 BAM Behavior Analyzer 3.2.1 Read Observed Sequence S.1 MATLAB
	← Target Track Files	3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
3.2.1 Read Observed Sequence	→ Stored Behavior Files	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.2 Read Stored Behavior Sequences B.1 BAM Behavior Analyzer 3.2.2 Read Stored Behavior Sequences P Electrical Power 3.2.2 Read Stored Behavior Sequences S.1 MATLAB
	← Target Track Files	3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
3.2.2 Read Stored Behavior Sequences	→ Stored Behavior Array	3.2.3 Build Production Matrix B.1 BAM Behavior Analyzer 3.2.3 Build Production Matrix P Electrical Power

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		3.2.3 Build Production Matrix S.1 MATLAB 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix P Electrical Power 3.2.4 Build Cost Matrix S.1 MATLAB
	← Stored Behavior Files	3.2.1 Read Observed Sequence P Electrical Power 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER 3.2.1 Read Observed Sequence B.1 BAM Behavior Analyzer 3.2.1 Read Observed Sequence S.1 MATLAB
3.2.3 Build Production Matrix	→ Production Matrix Array	3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix P Electrical Power 3.2.4 Build Cost Matrix S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.2.5 Calculate Costs S.1 MATLAB
	← Observed Sequence Array	3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
	← Stored Behavior Array	3.2.2 Read Stored Behavior Sequences B.1 BAM Behavior Analyzer 3.2.2 Read Stored Behavior Sequences P Electrical Power 3.2.2 Read Stored Behavior Sequences S.1 MATLAB
3.2.4 Build Cost Matrix	→ Cost Matrix Array	3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.2.5 Calculate Costs S.1 MATLAB 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
	← Production Matrix Array	3.2.3 Build Production Matrix B.1 BAM Behavior Analyzer 3.2.3 Build Production Matrix P Electrical Power 3.2.3 Build Production Matrix S.1 MATLAB
	← Stored Behavior Array	3.2.2 Read Stored Behavior Sequences

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		B.1 BAM Behavior Analyzer 3.2.2 Read Stored Behavior Sequences P Electrical Power 3.2.2 Read Stored Behavior Sequences S.1 MATLAB
3.2.5 Calculate Costs	→ Behavior Cost Thresholds	3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
	→ Threat Evaluation.NAE.07	3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		S.1 MATLAB 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← Cost Matrix Array	3.2.4 Build Cost Matrix S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix P Electrical Power
	← Environment Map Data	3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		S.4 MS SQL SERVER
	← Production Matrix Array	3.2.3 Build Production Matrix B.1 BAM Behavior Analyzer 3.2.3 Build Production Matrix P Electrical Power 3.2.3 Build Production Matrix S.1 MATLAB
3.3 Perform Contact Classification	→ Assign Track Category.NAE.07	3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	→ Track confirmed to be Target of Interest.NAE.07	3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	← Behavior Cost Thresholds	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power
	← Cost Matrix Array	3.2.4 Build Cost Matrix S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix P Electrical Power
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
3.3.1 Classify Normal	→ Assign Track Category.NAE.07	3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
	→ Observed Sequence Array	3.2.3 Build Production Matrix B.1 BAM Behavior Analyzer 3.2.3 Build Production Matrix P Electrical Power 3.2.3 Build Production Matrix S.1 MATLAB
	← Behavior Cost Thresholds	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power
	← Cost Matrix Array	3.2.4 Build Cost Matrix S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix P Electrical Power
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
3.3.2 Classify Abnormal	→ Assign Track Category.NAE.07	3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	→ Track confirmed to be Target of Interest.NAE.07	3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	← Behavior Cost Thresholds	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power
	← Cost Matrix Array	3.2.4 Build Cost Matrix S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		3.2.4 Build Cost Matrix P Electrical Power
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
3.3.3 Classify Unknown	→ Assign Track Category.NAE.07	3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	→ Track confirmed to be Target of Interest.NAE.07	3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	← Behavior Cost Thresholds	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power
	← Cost Matrix Array	3.2.4 Build Cost Matrix S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix P Electrical Power
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
3.4 Perform I&W	→ Alert Message.NAE.07	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	← Assign Track Category.NAE.07	3.3.2 Classify Abnormal S.1 MATLAB 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal P Electrical Power 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	← Track confirmed to be Target of Interest.NAE.07	3.3.3 Classify Unknown S.1 MATLAB 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown P Electrical Power
3.4.1 Perform Situational Analysis and Assessment	→ Defined Threat Behavior	3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	→ Threat Not Negated.NAE.07	3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		S.4 MS SQL SERVER
	← Assign Track Category.NAE.07	3.3.2 Classify Abnormal S.1 MATLAB 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal P Electrical Power 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
	← Track confirmed to be Target of Interest.NAE.07	3.3.3 Classify Unknown S.1 MATLAB 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown P Electrical Power
3.4.2 Evaluate Threat.NAE.07	→ Threat Evaluation.NAE.07	3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	→ Track Determined to be Threat.NAE.07	3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← Defined Threat Behavior	3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	← Threat Not Negated.NAE.07	3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
3.4.3 Alert Generation.NAE.07	→ Alert Message.NAE.07	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		B.1 BAM Behavior Analyzer 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	← Track Determined to be Threat.NAE.07	3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
O Perform Overhead Functions [UUV-FCN-0020]	→ BIT Status Response [UUV-ITM-0015]	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.1 Determine Own Battery Voltage P Electrical Power 4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU
	→ Feedback Provided.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence

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Table 68 HW.1 Mac Server External I/O

Functions	Interface Items	Interfacing Elements
		S.5 WILIFE COTS SW
O.1 Perform Startup [UUV-FCN-0022]	→ Feedback Provided.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]	→ BIT Status Response [UUV-ITM-0015]	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.1 Determine Own Battery Voltage P Electrical Power 4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU
O.4 Perform User Interface Functions	→ Feedback Provided.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
O.5 Perform Shut Down [UUV-FCN-0058]	→ Feedback Provided.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW

Table 69 HW.2 Mac Cinema Displays External I/O

Functions	Interface Items	Interfacing Elements
3.4 Perform I&W	→ Alert Message.NAE.07	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN

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Table 69 HW.2 Mac Cinema Displays External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	← Assign Track Category.NAE.07	3.3.1 Classify Normal S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs HW.1 Mac Server 3.2 Analyze Behavior B.1 BAM Behavior Analyzer

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Table 69 HW.2 Mac Cinema Displays External I/O

Functions	Interface Items	Interfacing Elements
		3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.2.5 Calculate Costs S.1 MATLAB 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	← Track confirmed to be Target of Interest.NAE.07	3.3.2 Classify Abnormal S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB

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Table 69 HW.2 Mac Cinema Displays External I/O

Functions	Interface Items	Interfacing Elements
3.4.2 Evaluate Threat.NAE.07	→ Threat Evaluation.NAE.07	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB 3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 P Electrical Power

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Table 69 HW.2 Mac Cinema Displays External I/O

Functions	Interface Items	Interfacing Elements
		3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	→ Track Determined to be Threat.NAE.07	3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← Defined Threat Behavior	3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	← Threat Not Negated.NAE.07	3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis

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Table 69 HW.2 Mac Cinema Displays External I/O

Functions	Interface Items	Interfacing Elements
		and Assessment S.4 MS SQL SERVER
3.4.3 Alert Generation.NAE.07	→ Alert Message.NAE.07	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs HW.1 Mac Server 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.2.5 Calculate Costs S.1 MATLAB 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server

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Table 69 HW.2 Mac Cinema Displays External I/O

Functions	Interface Items	Interfacing Elements
		3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	← Track Determined to be Threat.NAE.07	3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER

Table 70 HW.3 (Dell PC) Camera Node Command Center External I/O

Functions	Interface Items	Interfacing Elements
1.0 Detect	→ EO-IR Mission Data	2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
	→ Video Data	1.4 Store Video Data P Electrical Power 1.4 Store Video Data S.5 WILIFE COTS SW 2.0 Track HW.1 Mac Server 2.0 Track P Electrical Power 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track

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Table 70 HW.3 (Dell PC) Camera Node Command Center External I/O

Functions	Interface Items	Interfacing Elements
		S.4 MS SQL SERVER 2.0 Track T.1 Blob Tracker 2.1 Read Video Data P Electrical Power 2.1 Read Video Data S.2 MATLAB/SIMULINK
	← Infrastructure Elements	1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection P Electrical Power 1.5 Manage Video Collection S.5 WILIFE COTS SW
	← Sensor Coverage Assignments Assigned.NAE.07	1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection P Electrical Power 1.5 Manage Video Collection S.5 WILIFE COTS SW
1.4 Store Video Data	→ EO-IR Mission Data	2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
	← Infrastructure Elements	1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection P Electrical Power 1.5 Manage Video Collection S.5 WILIFE COTS SW
	← Video Data	1.3 Collect Video Data S.5 WILIFE COTS SW 1.0 Detect HW.4 IP Camera Network 1.0 Detect

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Table 70 HW.3 (Dell PC) Camera Node Command Center External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data P Electrical Power
1.5 Manage Video Collection	→ Infrastructure Elements	1.0 Detect HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.1 Monitor Domain HW.4 IP Camera Network 1.1 Monitor Domain P Electrical Power 1.1 Monitor Domain S.5 WILIFE COTS SW 1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data P Electrical Power 1.3 Collect Video Data S.5 WILIFE COTS SW 1.4 Store Video Data P Electrical Power 1.4 Store Video Data S.5 WILIFE COTS SW
	→ Sensor Coverage Assignments Assigned.NAE.07	1.0 Detect HW.4 IP Camera Network 1.0 Detect

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Table 70 HW.3 (Dell PC) Camera Node Command Center External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.1 Monitor Domain HW.4 IP Camera Network 1.1 Monitor Domain P Electrical Power 1.1 Monitor Domain S.5 WILIFE COTS SW 1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data P Electrical Power 1.3 Collect Video Data S.5 WILIFE COTS SW
2.0 Track	→ Target Track Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files

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Table 70 HW.3 (Dell PC) Camera Node Command Center External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Video Data	1.3 Collect Video Data S.5 WILIFE COTS SW 1.0 Detect HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data P Electrical Power
2.1 Read Video Data	→ Video Data Files	2.2 Process Video Data P Electrical Power 2.2 Process Video Data S.2 MATLAB/SIMULINK
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Video Data	1.3 Collect Video Data S.5 WILIFE COTS SW 1.0 Detect

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Table 70 HW.3 (Dell PC) Camera Node Command Center External I/O

Functions	Interface Items	Interfacing Elements
		HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data P Electrical Power
2.2 Process Video Data	→ EO-IR Mission Data	2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
	→ Processed Video Data	2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Video Data Files	2.1 Read Video Data P Electrical Power 2.1 Read Video Data S.2 MATLAB/SIMULINK
2.3 Build Contact Track	→ Target Track Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module

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Table 70 HW.3 (Dell PC) Camera Node Command Center External I/O

Functions	Interface Items	Interfacing Elements
		3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← EO-IR Mission Data	2.2 Process Video Data P Electrical Power 1.0 Detect HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.4 Store Video Data P Electrical Power 1.4 Store Video Data S.5 WILIFE COTS SW 2.2 Process Video Data S.2 MATLAB/SIMULINK
	← Processed Video Data	2.2 Process Video Data P Electrical Power 2.2 Process Video Data

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Table 70 HW.3 (Dell PC) Camera Node Command Center External I/O

Functions	Interface Items	Interfacing Elements
		S.2 MATLAB/SIMULINK
4.1 Task WSSN	→ WSSN Tasking Order	4.2 Process Tasking Order P Electrical Power 4.2 Process Tasking Order S.2 WSSN Agent 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
	← Alert Message.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W

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Table 70 HW.3 (Dell PC) Camera Node Command Center External I/O

Functions	Interface Items	Interfacing Elements
		S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← WSSN Tasking Order Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER
4.1.1 Receive WSSN Tasking Order Data from Watchman Server	→ WSSN Tasking Order Data Received	4.1.2 Generate WSSN Tasking Order P Electrical Power
	← Alert Message.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) P Electrical Power

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Table 70 HW.3 (Dell PC) Camera Node Command Center External I/O

Functions	Interface Items	Interfacing Elements
		3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
4.1.2 Generate WSSN Tasking Order	→ WSSN Tasking Order Ready for Send	4.1.3 Send WSSN Tasking Order to WSSN P Electrical Power 4.1.3 Send WSSN Tasking Order to WSSN S.1.2 WSSN C2 Node Comms
	← WSSN Tasking Order Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior

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Table 70 HW.3 (Dell PC) Camera Node Command Center External I/O

Functions	Interface Items	Interfacing Elements
		Analysis) P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER
	← WSSN Tasking Order Data Received	4.1.1 Receive WSSN Tasking Order Data from Watchman Server P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
4.1.3 Send WSSN Tasking Order to WSSN	→ WSSN Tasking Order	4.2 Process Tasking Order P Electrical Power 4.2 Process Tasking Order S.2 WSSN Agent 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
	← WSSN Tasking Order Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis)

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Table 70 HW.3 (Dell PC) Camera Node Command Center External I/O

Functions	Interface Items	Interfacing Elements
		S.4 MS SQL SERVER
	← WSSN Tasking Order Ready for Send	4.1.2 Generate WSSN Tasking Order P Electrical Power
4.4 Respond to WSSN Tasking Order	→ WSSN Task Order Response Data	Ext.1 Analyze WSSN Tasking Order Response Data P Electrical Power
	← COI Color Data	4.3.4.2 Collect COI Color P Electrical Power 4.3.4.2 Collect COI Color S.2.1 WSSN Agent CPU 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor
	← COI Image Data	4.3.4.1 Collect COI Image P Electrical Power 4.3.4.1 Collect COI Image S.2.1 WSSN Agent CPU 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor
	← Data Collection Complete	4.3.4.1 Collect COI Image P Electrical Power 4.3 Execute WSSN Tasking Order P Electrical Power 4.3 Execute WSSN Tasking Order S.2 WSSN Agent 4.3.4 Collect COI Data P Electrical Power 4.3.4 Collect COI Data S.2.1 WSSN Agent CPU 4.3.4 Collect COI Data S.2.2 WSSN Agent Collection Sensors 4.3.4.1 Collect COI Image S.2.1 WSSN Agent CPU 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor 4.3.4.2 Collect COI Color P Electrical Power

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Table 70 HW.3 (Dell PC) Camera Node Command Center External I/O

Functions	Interface Items	Interfacing Elements
		4.3.4.2 Collect COI Color S.2.1 WSSN Agent CPU 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor
4.4.1 Generate WSSN Tasking Order Response	→ WSSN Tasking Order Response	4.4.2 Send WSSN Tasking Order Response to WSSN C2 P Electrical Power 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.1 WSSN Agent CPU 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.4 WSSN Agent Comms 4.4.3 Receive WSSN Tasking Order Response from WSSN P Electrical Power 4.4.3 Receive WSSN Tasking Order Response from WSSN S.1.2 WSSN C2 Node Comms 4.4.4 Process WSSN Tasking Order Response P Electrical Power
	→ WSSN Tasking Order Response Ready to Send	4.4.2 Send WSSN Tasking Order Response to WSSN C2 P Electrical Power 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.1 WSSN Agent CPU 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.4 WSSN Agent Comms
	← COI Color Data	4.3.4.2 Collect COI Color P Electrical Power 4.3.4.2 Collect COI Color S.2.1 WSSN Agent CPU 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor
	← COI Image Data	4.3.4.1 Collect COI Image P Electrical Power 4.3.4.1 Collect COI Image

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Table 70 HW.3 (Dell PC) Camera Node Command Center External I/O

Functions	Interface Items	Interfacing Elements
		S.2.1 WSSN Agent CPU 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor
	← Data Collection Complete	4.3.4.1 Collect COI Image P Electrical Power 4.3 Execute WSSN Tasking Order P Electrical Power 4.3 Execute WSSN Tasking Order S.2 WSSN Agent 4.3.4 Collect COI Data P Electrical Power 4.3.4 Collect COI Data S.2.1 WSSN Agent CPU 4.3.4 Collect COI Data S.2.2 WSSN Agent Collection Sensors 4.3.4.1 Collect COI Image S.2.1 WSSN Agent CPU 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor 4.3.4.2 Collect COI Color P Electrical Power 4.3.4.2 Collect COI Color S.2.1 WSSN Agent CPU 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor
4.4.2 Send WSSN Tasking Order Response to WSSN C2	→ WSSN C2 Comms Request	4.4.3 Receive WSSN Tasking Order Response from WSSN P Electrical Power 4.4.3 Receive WSSN Tasking Order Response from WSSN S.1.2 WSSN C2 Node Comms
	← WSSN Tasking Order Response	4.4.1 Generate WSSN Tasking Order Response P Electrical Power 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
	← WSSN Tasking Order Response	4.4.1 Generate WSSN Tasking

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Table 70 HW.3 (Dell PC) Camera Node Command Center External I/O

Functions	Interface Items	Interfacing Elements
	Ready to Send	Order Response P Electrical Power 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
4.4.3 Receive WSSN Tasking Order Response from WSSN	→ WSSN Tasking Order Response Received	4.4.4 Process WSSN Tasking Order Response P Electrical Power
	← WSSN C2 Comms Request	4.4.2 Send WSSN Tasking Order Response to WSSN C2 P Electrical Power 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.1 WSSN Agent CPU 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.4 WSSN Agent Comms
	← WSSN Tasking Order Response	4.4.1 Generate WSSN Tasking Order Response P Electrical Power 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
4.4.4 Process WSSN Tasking Order Response	→ WSSN Task Order Response Data	Ext.1 Analyze WSSN Tasking Order Response Data P Electrical Power
	← WSSN Tasking Order Response	4.4.1 Generate WSSN Tasking Order Response P Electrical Power 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
	← WSSN Tasking Order Response Received	4.4.3 Receive WSSN Tasking Order Response from WSSN P Electrical Power 4.4.3 Receive WSSN Tasking Order Response from WSSN S.1.2 WSSN C2 Node Comms

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Table 71 HW.4 IP Camera Network External I/O

Functions	Interface Items	Interfacing Elements
1.0 Detect	→ EO-IR Mission Data	2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
	→ Video Data	1.4 Store Video Data HW.3 (Dell PC) Camera Node Command Center 1.4 Store Video Data P Electrical Power 1.4 Store Video Data S.5 WILIFE COTS SW 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track P Electrical Power 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track S.4 MS SQL SERVER 2.0 Track T.1 Blob Tracker 2.1 Read Video Data HW.3 (Dell PC) Camera Node Command Center 2.1 Read Video Data P Electrical Power 2.1 Read Video Data

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Table 71 HW.4 IP Camera Network External I/O

Functions	Interface Items	Interfacing Elements
		S.2 MATLAB/SIMULINK
	← Infrastructure Elements	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection P Electrical Power 1.5 Manage Video Collection S.5 WILIFE COTS SW
	← Sensor Coverage Assignments Assigned.NAE.07	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection P Electrical Power 1.5 Manage Video Collection S.5 WILIFE COTS SW
1.1 Monitor Domain	→ Feedback Provided.NAE.07	1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Infrastructure Elements	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection P Electrical Power 1.5 Manage Video Collection S.5 WILIFE COTS SW
	← Sensor Coverage Assignments Assigned.NAE.07	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection P Electrical Power 1.5 Manage Video Collection S.5 WILIFE COTS SW
1.2 Determine Contact Presence	→ Process Signals/Sensor Data.NAE.07	1.3 Collect Video Data P Electrical Power 1.3 Collect Video Data S.5 WILIFE COTS SW 2.0 Track HW.1 Mac Server

Table 71 HW.4 IP Camera Network External I/O

Functions	Interface Items	Interfacing Elements
		2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track P Electrical Power 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track S.4 MS SQL SERVER 2.0 Track T.1 Blob Tracker 2.1 Read Video Data HW.3 (Dell PC) Camera Node Command Center 2.1 Read Video Data P Electrical Power 2.1 Read Video Data S.2 MATLAB/SIMULINK 2.2 Process Video Data HW.3 (Dell PC) Camera Node Command Center 2.2 Process Video Data P Electrical Power 2.2 Process Video Data S.2 MATLAB/SIMULINK 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← Feedback Provided.NAE.07	O.1 Perform Startup [UUV-FCN-0022]

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Table 71 HW.4 IP Camera Network External I/O

Functions	Interface Items	Interfacing Elements
		HW.1 Mac Server 1.1 Monitor Domain P Electrical Power 1.1 Monitor Domain S.5 WILIFE COTS SW O Perform Overhead Functions [UUV-FCN-0020] HW.1 Mac Server O Perform Overhead Functions [UUV-FCN-0020] P Electrical Power O Perform Overhead Functions [UUV-FCN-0020] S Software Suite O.1 Perform Startup [UUV-FCN-0022] P Electrical Power O.4 Perform User Interface Functions HW.1 Mac Server O.4 Perform User Interface Functions P Electrical Power O.5 Perform Shut Down [UUV-FCN-0058] HW.1 Mac Server O.5 Perform Shut Down [UUV-FCN-0058] P Electrical Power
	← Infrastructure Elements	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection

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Table 71 HW.4 IP Camera Network External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power 1.5 Manage Video Collection S.5 WILIFE COTS SW
	← Sensor Coverage Assignments Assigned.NAE.07	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection P Electrical Power 1.5 Manage Video Collection S.5 WILIFE COTS SW
1.3 Collect Video Data	→ Video Data	1.4 Store Video Data HW.3 (Dell PC) Camera Node Command Center 1.4 Store Video Data P Electrical Power 1.4 Store Video Data S.5 WILIFE COTS SW 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track P Electrical Power 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track S.4 MS SQL SERVER 2.0 Track T.1 Blob Tracker 2.1 Read Video Data HW.3 (Dell PC) Camera Node Command Center 2.1 Read Video Data P Electrical Power 2.1 Read Video Data S.2 MATLAB/SIMULINK

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Table 71 HW.4 IP Camera Network External I/O

Functions	Interface Items	Interfacing Elements
	← Infrastructure Elements	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection P Electrical Power 1.5 Manage Video Collection S.5 WILIFE COTS SW
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Sensor Coverage Assignments Assigned.NAE.07	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection P Electrical Power 1.5 Manage Video Collection S.5 WILIFE COTS SW
1.5 Manage Video Collection	→ Infrastructure Elements	1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.1 Monitor Domain P Electrical Power 1.1 Monitor Domain S.5 WILIFE COTS SW 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW 1.3 Collect Video Data P Electrical Power 1.3 Collect Video Data S.5 WILIFE COTS SW 1.4 Store Video Data HW.3 (Dell PC) Camera Node

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Table 71 HW.4 IP Camera Network External I/O

Functions	Interface Items	Interfacing Elements
		Command Center 1.4 Store Video Data P Electrical Power 1.4 Store Video Data S.5 WILIFE COTS SW
	→ Sensor Coverage Assignments Assigned.NAE.07	1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.1 Monitor Domain P Electrical Power 1.1 Monitor Domain S.5 WILIFE COTS SW 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW 1.3 Collect Video Data P Electrical Power 1.3 Collect Video Data S.5 WILIFE COTS SW

Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
1.0 Detect	→ EO-IR Mission Data	2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
	→ Video Data	1.4 Store Video Data HW.3 (Dell PC) Camera Node Command Center

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		1.4 Store Video Data S.5 WILIFE COTS SW 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track S.4 MS SQL SERVER 2.0 Track T.1 Blob Tracker 2.1 Read Video Data HW.3 (Dell PC) Camera Node Command Center 2.1 Read Video Data S.2 MATLAB/SIMULINK
	← Infrastructure Elements	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection S.5 WILIFE COTS SW
	← Sensor Coverage Assignments Assigned.NAE.07	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection S.5 WILIFE COTS SW
1.1 Monitor Domain	→ Feedback Provided.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Infrastructure Elements	1.5 Manage Video Collection

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection S.5 WILIFE COTS SW
	← Sensor Coverage Assignments Assigned.NAE.07	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection S.5 WILIFE COTS SW
1.2 Determine Contact Presence	→ Process Signals/Sensor Data.NAE.07	1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data S.5 WILIFE COTS SW 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track S.4 MS SQL SERVER 2.0 Track T.1 Blob Tracker 2.1 Read Video Data HW.3 (Dell PC) Camera Node Command Center 2.1 Read Video Data S.2 MATLAB/SIMULINK 2.2 Process Video Data HW.3 (Dell PC) Camera Node Command Center 2.2 Process Video Data

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		S.2 MATLAB/SIMULINK 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← Feedback Provided.NAE.07	O.1 Perform Startup [UUV-FCN-0022] HW.1 Mac Server 1.1 Monitor Domain HW.4 IP Camera Network 1.1 Monitor Domain S.5 WILIFE COTS SW O Perform Overhead Functions [UUV-FCN-0020] HW Hardware Suite O Perform Overhead Functions [UUV-FCN-0020] HW.1 Mac Server O Perform Overhead Functions [UUV-FCN-0020] S Software Suite O.4 Perform User Interface Functions HW.1 Mac Server O.5 Perform Shut Down [UUV-FCN-0058] HW.1 Mac Server
	← Infrastructure Elements	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection S.5 WILIFE COTS SW
	← Sensor Coverage Assignments Assigned.NAE.07	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection S.5 WILIFE COTS SW
1.3 Collect Video Data	→ Video Data	1.4 Store Video Data HW.3 (Dell PC) Camera Node Command Center 1.4 Store Video Data S.5 WILIFE COTS SW 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track S.4 MS SQL SERVER 2.0 Track T.1 Blob Tracker 2.1 Read Video Data HW.3 (Dell PC) Camera Node Command Center 2.1 Read Video Data S.2 MATLAB/SIMULINK
	← Infrastructure Elements	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		1.5 Manage Video Collection S.5 WILIFE COTS SW
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Sensor Coverage Assignments Assigned.NAE.07	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection S.5 WILIFE COTS SW
1.4 Store Video Data	→ EO-IR Mission Data	2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
	← Infrastructure Elements	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection S.5 WILIFE COTS SW
	← Video Data	1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect S.5 WILIFE COTS SW 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		S.5 WILIFE COTS SW
1.5 Manage Video Collection	→ Infrastructure Elements	1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect S.5 WILIFE COTS SW 1.1 Monitor Domain HW.4 IP Camera Network 1.1 Monitor Domain S.5 WILIFE COTS SW 1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence S.5 WILIFE COTS SW 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data S.5 WILIFE COTS SW 1.4 Store Video Data HW.3 (Dell PC) Camera Node Command Center 1.4 Store Video Data S.5 WILIFE COTS SW
	→ Sensor Coverage Assignments Assigned.NAE.07	1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect S.5 WILIFE COTS SW 1.1 Monitor Domain HW.4 IP Camera Network 1.1 Monitor Domain S.5 WILIFE COTS SW 1.2 Determine Contact Presence HW.4 IP Camera Network

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		1.2 Determine Contact Presence S.5 WILIFE COTS SW 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data S.5 WILIFE COTS SW
2.0 Track	→ Target Track Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Video Data	1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect S.5 WILIFE COTS SW 1.3 Collect Video Data HW.4 IP Camera Network

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		1.3 Collect Video Data S.5 WILIFE COTS SW
2.1 Read Video Data	→ Video Data Files	2.2 Process Video Data HW.3 (Dell PC) Camera Node Command Center 2.2 Process Video Data S.2 MATLAB/SIMULINK
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Video Data	1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect S.5 WILIFE COTS SW 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data S.5 WILIFE COTS SW
2.2 Process Video Data	→ EO-IR Mission Data	2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
	→ Processed Video Data	2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		S.4 MS SQL SERVER
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Video Data Files	2.1 Read Video Data HW.3 (Dell PC) Camera Node Command Center 2.1 Read Video Data S.2 MATLAB/SIMULINK
2.3 Build Contact Track	→ Target Track Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← EO-IR Mission Data	2.2 Process Video Data HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		S.5 WILIFE COTS SW 1.4 Store Video Data HW.3 (Dell PC) Camera Node Command Center 1.4 Store Video Data S.5 WILIFE COTS SW 2.2 Process Video Data S.2 MATLAB/SIMULINK
	← Processed Video Data	2.2 Process Video Data HW.3 (Dell PC) Camera Node Command Center 2.2 Process Video Data S.2 MATLAB/SIMULINK
3.0 Classify (Conduct Behavior Analysis)	→ Alert Message.NAE.07	4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	→ WSSN Tasking Order Data	4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1.2 Generate WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.1.3 Send WSSN Tasking Order to WSSN HW.3 (Dell PC) Camera Node Command Center 4.1.3 Send WSSN Tasking Order to WSSN S.1.2 WSSN C2 Node Comms

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
	← Target Track Data	2.0 Track T.1 Blob Tracker 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track S.4 MS SQL SERVER 2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
3.1 Read Contact Data Files	→ Environment Map Data	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.2.5 Calculate Costs S.1 MATLAB
	→ Stored Behavior Files	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		3.2 Analyze Behavior S.1 MATLAB 3.2.2 Read Stored Behavior Sequences B.1 BAM Behavior Analyzer 3.2.2 Read Stored Behavior Sequences HW.1 Mac Server 3.2.2 Read Stored Behavior Sequences S.1 MATLAB
	→ Target Track Files	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.1 Read Observed Sequence B.1 BAM Behavior Analyzer 3.2.1 Read Observed Sequence HW.1 Mac Server 3.2.1 Read Observed Sequence S.1 MATLAB
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Target Track Data	2.0 Track T.1 Blob Tracker 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		S.4 MS SQL SERVER 2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
3.2 Analyze Behavior	→ Behavior Cost Thresholds	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown S.1 MATLAB
	→ Cost Matrix Array	3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.2.5 Calculate Costs S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown S.1 MATLAB
	→ Threat Evaluation.NAE.07	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown S.1 MATLAB 3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← Environment Map Data	3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← Stored Behavior Files	3.2.1 Read Observed Sequence HW.1 Mac Server 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER 3.2.1 Read Observed Sequence B.1 BAM Behavior Analyzer 3.2.1 Read Observed Sequence S.1 MATLAB
	← Target Track Files	3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
3.2.1 Read Observed Sequence	→ Stored Behavior Files	3.2 Analyze Behavior B.1 BAM Behavior Analyzer

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.2 Read Stored Behavior Sequences B.1 BAM Behavior Analyzer 3.2.2 Read Stored Behavior Sequences HW.1 Mac Server 3.2.2 Read Stored Behavior Sequences S.1 MATLAB
	← Target Track Files	3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
3.2.2 Read Stored Behavior Sequences	→ Stored Behavior Array	3.2.3 Build Production Matrix B.1 BAM Behavior Analyzer 3.2.3 Build Production Matrix HW.1 Mac Server 3.2.3 Build Production Matrix S.1 MATLAB 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix HW.1 Mac Server 3.2.4 Build Cost Matrix S.1 MATLAB
	← Stored Behavior Files	3.2.1 Read Observed Sequence HW.1 Mac Server 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER 3.2.1 Read Observed Sequence B.1 BAM Behavior Analyzer 3.2.1 Read Observed Sequence S.1 MATLAB
3.2.3 Build Production Matrix	→ Production Matrix Array	3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix HW.1 Mac Server 3.2.4 Build Cost Matrix S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.2.5 Calculate Costs S.1 MATLAB
	← Observed Sequence Array	3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal S.1 MATLAB
	← Stored Behavior Array	3.2.2 Read Stored Behavior Sequences B.1 BAM Behavior Analyzer 3.2.2 Read Stored Behavior Sequences HW.1 Mac Server 3.2.2 Read Stored Behavior Sequences S.1 MATLAB
3.2.4 Build Cost Matrix	→ Cost Matrix Array	3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		3.2.5 Calculate Costs S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown S.1 MATLAB
	← Production Matrix Array	3.2.3 Build Production Matrix B.1 BAM Behavior Analyzer 3.2.3 Build Production Matrix HW.1 Mac Server 3.2.3 Build Production Matrix S.1 MATLAB
	← Stored Behavior Array	3.2.2 Read Stored Behavior Sequences B.1 BAM Behavior Analyzer 3.2.2 Read Stored Behavior Sequences HW.1 Mac Server 3.2.2 Read Stored Behavior Sequences S.1 MATLAB
3.2.5 Calculate Costs	→ Behavior Cost Thresholds	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		HW.1 Mac Server 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown S.1 MATLAB
	→ Threat Evaluation.NAE.07	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown S.1 MATLAB 3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← Cost Matrix Array	3.2.4 Build Cost Matrix S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix HW.1 Mac Server
	← Environment Map Data	3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← Production Matrix Array	3.2.3 Build Production Matrix B.1 BAM Behavior Analyzer 3.2.3 Build Production Matrix HW.1 Mac Server 3.2.3 Build Production Matrix S.1 MATLAB
3.3 Perform Contact Classification	→ Assign Track Category.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	→ Track confirmed to be Target of Interest.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	← Behavior Cost Thresholds	3.2.5 Calculate Costs

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server
	← Cost Matrix Array	3.2.4 Build Cost Matrix S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix HW.1 Mac Server
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
3.3.1 Classify Normal	→ Assign Track Category.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	→ Observed Sequence Array	3.2.3 Build Production Matrix B.1 BAM Behavior Analyzer 3.2.3 Build Production Matrix HW.1 Mac Server 3.2.3 Build Production Matrix S.1 MATLAB
	← Behavior Cost Thresholds	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server
	← Cost Matrix Array	3.2.4 Build Cost Matrix S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix HW.1 Mac Server
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
3.3.2 Classify Abnormal	→ Assign Track Category.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	→ Track confirmed to be Target of Interest.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	← Behavior Cost Thresholds	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server
	← Cost Matrix Array	3.2.4 Build Cost Matrix S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix HW.1 Mac Server
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		3.2.5 Calculate Costs HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
3.3.3 Classify Unknown	→ Assign Track Category.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	→ Track confirmed to be Target of Interest.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	← Behavior Cost Thresholds	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server
	← Cost Matrix Array	3.2.4 Build Cost Matrix S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix HW.1 Mac Server

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
3.4 Perform I&W	→ Alert Message.NAE.07	4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	← Assign Track Category.NAE.07	3.3.2 Classify Abnormal S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		HW.1 Mac Server 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown S.1 MATLAB
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	← Track confirmed to be Target of Interest.NAE.07	3.3.3 Classify Unknown S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server
3.4.1 Perform Situational Analysis and Assessment	→ Defined Threat Behavior	3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	→ Threat Not Negated.NAE.07	3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	← Assign Track Category.NAE.07	3.3.2 Classify Abnormal S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown S.1 MATLAB
	← Track confirmed to be Target of Interest.NAE.07	3.3.3 Classify Unknown S.1 MATLAB 3.3 Perform Contact Classification

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		HW.1 Mac Server 3.3 Perform Contact Classification S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server
3.4.2 Evaluate Threat.NAE.07	→ Threat Evaluation.NAE.07	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown S.1 MATLAB 3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07

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Functions	Interface Items	Interfacing Elements
		HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	→ Track Determined to be Threat.NAE.07	3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← Defined Threat Behavior	3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	← Threat Not Negated.NAE.07	3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
3.4.3 Alert Generation.NAE.07	→ Alert Message.NAE.07	4.0 Respond S.2 WSSN Agent 4.1 Task WSSN

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Functions	Interface Items	Interfacing Elements
		HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs S.1 MATLAB 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	← Track Determined to be Threat.NAE.07	3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
4.0 Respond	← Alert Message.NAE.07	3.4 Perform I&W HW.2 Mac Cinema Displays

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Functions	Interface Items	Interfacing Elements
		3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← WSSN Tasking Order Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER

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Functions	Interface Items	Interfacing Elements
4.1 Task WSSN	→ WSSN Tasking Order	4.2 Process Tasking Order S.2 WSSN Agent 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
	← Alert Message.NAE.07	3.4 Perform I&W HW.2 Mac Cinema Displays 3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← WSSN Tasking Order Data	3.0 Classify (Conduct Behavior

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Functions	Interface Items	Interfacing Elements
		Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER
4.1.1 Receive WSSN Tasking Order Data from Watchman Server	→ WSSN Tasking Order Data Received	4.1.2 Generate WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center
	← Alert Message.NAE.07	3.4 Perform I&W HW.2 Mac Cinema Displays 3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07

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Functions	Interface Items	Interfacing Elements
		HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
4.1.2 Generate WSSN Tasking Order	→ WSSN Tasking Order Ready for Send	4.1.3 Send WSSN Tasking Order to WSSN HW.3 (Dell PC) Camera Node Command Center 4.1.3 Send WSSN Tasking Order to WSSN S.1.2 WSSN C2 Node Comms
	← WSSN Tasking Order Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER
	← WSSN Tasking Order Data Received	4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
4.1.3 Send WSSN Tasking Order to WSSN	→ WSSN Tasking Order	4.2 Process Tasking Order S.2 WSSN Agent 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
	← WSSN Tasking Order Data	3.0 Classify (Conduct Behavior Analysis)

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Functions	Interface Items	Interfacing Elements
		B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER
	← WSSN Tasking Order Ready for Send	4.1.2 Generate WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center
4.2 Process Tasking Order	→ Contact Position	4.3 Execute WSSN Tasking Order S.2 WSSN Agent 4.3.1 Navigate to COI Zone S.2.1 WSSN Agent CPU 4.3.1 Navigate to COI Zone S.2.3 WSSN Agent Detection Sensors 4.3.1 Navigate to COI Zone S.2.5 WSSN Motors
	→ Required Data Type	4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU 4.3 Execute WSSN Tasking Order S.2 WSSN Agent 4.3.4 Collect COI Data S.2.1 WSSN Agent CPU 4.3.4 Collect COI Data S.2.2 WSSN Agent Collection Sensors 4.3.4.1 Collect COI Image S.2.1 WSSN Agent CPU 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor 4.3.4.2 Collect COI Color S.2.1 WSSN Agent CPU 4.3.4.2 Collect COI Color

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Functions	Interface Items	Interfacing Elements
		S.2.2.2 Color Sensor 4.3.4.3 Collect COI Video S.2.1 WSSN Agent CPU 4.3.4.3 Collect COI Video S.2.2.1 Image Sensor
	← WSSN Tasking Order	4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1.3 Send WSSN Tasking Order to WSSN HW.3 (Dell PC) Camera Node Command Center 4.1.3 Send WSSN Tasking Order to WSSN S.1.2 WSSN C2 Node Comms
4.2.1 Receive WSSN Tasking Order from WSSN C2	→ Contact Position	4.3 Execute WSSN Tasking Order S.2 WSSN Agent 4.3.1 Navigate to COI Zone S.2.1 WSSN Agent CPU 4.3.1 Navigate to COI Zone S.2.3 WSSN Agent Detection Sensors 4.3.1 Navigate to COI Zone S.2.5 WSSN Motors
	→ Required Data Type	4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU 4.3 Execute WSSN Tasking Order S.2 WSSN Agent 4.3.4 Collect COI Data S.2.1 WSSN Agent CPU 4.3.4 Collect COI Data S.2.2 WSSN Agent Collection Sensors 4.3.4.1 Collect COI Image S.2.1 WSSN Agent CPU 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor 4.3.4.2 Collect COI Color S.2.1 WSSN Agent CPU

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		4.3.4.2 Collect COI Color S.2.2.2 Color Sensor 4.3.4.3 Collect COI Video S.2.1 WSSN Agent CPU 4.3.4.3 Collect COI Video S.2.2.1 Image Sensor
	← WSSN Tasking Order	4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1.3 Send WSSN Tasking Order to WSSN HW.3 (Dell PC) Camera Node Command Center 4.1.3 Send WSSN Tasking Order to WSSN S.1.2 WSSN C2 Node Comms
4.2.2 Get Battery Voltages	→ Other Battery Voltage	4.2.2.4 Compare Battery Voltages S.2.1 WSSN Agent CPU 4.2.3 Determine Task Agent S.2.1 WSSN Agent CPU
	→ Own Battery Voltage	4.2.2.2 Send Own Battery Voltage to Other Agent S.2.1 WSSN Agent CPU 4.2.2.2 Send Own Battery Voltage to Other Agent S.2.4 WSSN Agent Comms 4.2.2.4 Compare Battery Voltages S.2.1 WSSN Agent CPU 4.2.3 Determine Task Agent S.2.1 WSSN Agent CPU
	← BIT Status Response [UUV-ITM-0015]	O.6.3 Enter WSSN Tasking Order Receive Mode S.2.1 WSSN Agent CPU O Perform Overhead Functions [UUV-FCN-0020] HW Hardware Suite O Perform Overhead Functions [UUV-FCN-0020]

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		HW.1 Mac Server O Perform Overhead Functions [UUV-FCN-0020] S Software Suite O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] HW.1 Mac Server O.6 Initialize WSSN Agent S.2 WSSN Agent O.6.3 Enter WSSN Tasking Order Receive Mode S.2.4 WSSN Agent Comms
	← Required Data Type	4.2 Process Tasking Order S.2 WSSN Agent 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
4.2.2.1 Determine Own Battery Voltage	→ Own Battery Voltage	4.2.2.2 Send Own Battery Voltage to Other Agent S.2.1 WSSN Agent CPU 4.2.2.2 Send Own Battery Voltage to Other Agent S.2.4 WSSN Agent Comms 4.2.2.4 Compare Battery Voltages S.2.1 WSSN Agent CPU 4.2.3 Determine Task Agent S.2.1 WSSN Agent CPU
	← BIT Status Response [UUV-ITM-0015]	O.6.3 Enter WSSN Tasking Order Receive Mode S.2.1 WSSN Agent CPU O Perform Overhead Functions [UUV-FCN-0020] HW Hardware Suite O Perform Overhead Functions

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		[UUV-FCN-0020] HW.1 Mac Server O Perform Overhead Functions [UUV-FCN-0020] S Software Suite O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] HW.1 Mac Server O.6 Initialize WSSN Agent S.2 WSSN Agent O.6.3 Enter WSSN Tasking Order Receive Mode S.2.4 WSSN Agent Comms
	← Diags SAT	O.6.1.1 Perform Diagnostics S.2.1 WSSN Agent CPU O.6.1.1 Perform Diagnostics S.2.2 WSSN Agent Collection Sensors O.6.1.1 Perform Diagnostics S.2.3 WSSN Agent Detection Sensors
	← Required Data Type	4.2 Process Tasking Order S.2 WSSN Agent 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
4.2.2.2 Send Own Battery Voltage to Other Agent	→ Own Battery Voltage Sent	4.2.2.3 Receive Battery Voltage from Other Agent S.2.1 WSSN Agent CPU 4.2.2.3 Receive Battery Voltage from Other Agent S.2.4 WSSN Agent Comms
	← Own Battery Voltage	4.2.2.1 Determine Own Battery Voltage

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		S.2.1 WSSN Agent CPU
4.2.2.3 Receive Battery Voltage from Other Agent	→ Other Battery Voltage	4.2.2.4 Compare Battery Voltages S.2.1 WSSN Agent CPU 4.2.3 Determine Task Agent S.2.1 WSSN Agent CPU
	← Own Battery Voltage Sent	4.2.2.2 Send Own Battery Voltage to Other Agent S.2.1 WSSN Agent CPU 4.2.2.2 Send Own Battery Voltage to Other Agent S.2.4 WSSN Agent Comms
4.2.2.4 Compare Battery Voltages	→ Task Agent Designation	4.3 Execute WSSN Tasking Order S.2 WSSN Agent 4.3.1 Navigate to COI Zone S.2.1 WSSN Agent CPU 4.3.1 Navigate to COI Zone S.2.3 WSSN Agent Detection Sensors 4.3.1 Navigate to COI Zone S.2.5 WSSN Motors
	← Other Battery Voltage	4.2.2.3 Receive Battery Voltage from Other Agent S.2.1 WSSN Agent CPU 4.2.2.3 Receive Battery Voltage from Other Agent S.2.4 WSSN Agent Comms
	← Own Battery Voltage	4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU
4.2.3 Determine Task Agent	→ Task Agent Designation	4.3 Execute WSSN Tasking Order S.2 WSSN Agent 4.3.1 Navigate to COI Zone S.2.1 WSSN Agent CPU 4.3.1 Navigate to COI Zone S.2.3 WSSN Agent Detection Sensors 4.3.1 Navigate to COI Zone S.2.5 WSSN Motors
	← Other Battery Voltage	4.2.2.3 Receive Battery Voltage from Other Agent

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		S.2.1 WSSN Agent CPU 4.2.2.3 Receive Battery Voltage from Other Agent S.2.4 WSSN Agent Comms
	← Own Battery Voltage	4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU
4.3 Execute WSSN Tasking Order	→ Data Collection Complete	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order S.2 WSSN Agent 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
	← Contact Position	4.2 Process Tasking Order S.2 WSSN Agent 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
	← Required Data Type	4.2 Process Tasking Order S.2 WSSN Agent 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
	← Task Agent Designation	4.2.2.4 Compare Battery Voltages S.2.1 WSSN Agent CPU 4.2.3 Determine Task Agent S.2.1 WSSN Agent CPU

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
4.3.1 Navigate to COI Zone	→ Agent at COI Zone	4.3.2 Detect COI S.2.1 WSSN Agent CPU 4.3.2 Detect COI S.2.3 WSSN Agent Detection Sensors
	← Contact Position	4.2 Process Tasking Order S.2 WSSN Agent 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
	← Task Agent Designation	4.2.2.4 Compare Battery Voltages S.2.1 WSSN Agent CPU 4.2.3 Determine Task Agent S.2.1 WSSN Agent CPU
4.3.2 Detect COI	→ Contact Detected	4.3.3 Maneuver to COI S.2.1 WSSN Agent CPU 4.3.3 Maneuver to COI S.2.3 WSSN Agent Detection Sensors 4.3.3 Maneuver to COI S.2.5 WSSN Motors
	← Agent at COI Zone	4.3.1 Navigate to COI Zone S.2.1 WSSN Agent CPU 4.3.1 Navigate to COI Zone S.2.3 WSSN Agent Detection Sensors 4.3.1 Navigate to COI Zone S.2.5 WSSN Motors
4.3.3 Maneuver to COI	→ COI in Range	4.3.4 Collect COI Data S.2.1 WSSN Agent CPU 4.3.4 Collect COI Data S.2.2 WSSN Agent Collection Sensors 4.3.4.1 Collect COI Image S.2.1 WSSN Agent CPU 4.3.4.1 Collect COI Image

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		S.2.2.1 Image Sensor 4.3.4.2 Collect COI Color S.2.1 WSSN Agent CPU 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor 4.3.4.3 Collect COI Video S.2.1 WSSN Agent CPU 4.3.4.3 Collect COI Video S.2.2.1 Image Sensor
	← Contact Detected	4.3.2 Detect COI S.2.1 WSSN Agent CPU 4.3.2 Detect COI S.2.3 WSSN Agent Detection Sensors
4.3.4 Collect COI Data	→ Data Collection Complete	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order S.2 WSSN Agent 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
	← COI in Range	4.3.3 Maneuver to COI S.2.1 WSSN Agent CPU 4.3.3 Maneuver to COI S.2.3 WSSN Agent Detection Sensors 4.3.3 Maneuver to COI S.2.5 WSSN Motors
	← Required Data Type	4.2 Process Tasking Order S.2 WSSN Agent 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
4.3.4.1 Collect COI Image	→ COI Image Data	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order S.2 WSSN Agent 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
	→ Data Collection Complete	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order S.2 WSSN Agent 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
	← COI in Range	4.3.3 Maneuver to COI S.2.1 WSSN Agent CPU 4.3.3 Maneuver to COI S.2.3 WSSN Agent Detection Sensors 4.3.3 Maneuver to COI S.2.5 WSSN Motors
	← Required Data Type	4.2 Process Tasking Order S.2 WSSN Agent 4.2.1 Receive WSSN Tasking Order

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
4.3.4.2 Collect COI Color	→ COI Color Data	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order S.2 WSSN Agent 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
	→ Data Collection Complete	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order S.2 WSSN Agent 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
	← COI in Range	4.3.3 Maneuver to COI S.2.1 WSSN Agent CPU 4.3.3 Maneuver to COI S.2.3 WSSN Agent Detection Sensors 4.3.3 Maneuver to COI S.2.5 WSSN Motors
	← Required Data Type	4.2 Process Tasking Order

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		S.2 WSSN Agent 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
4.3.4.3 Collect COI Video	← COI in Range	4.3.3 Maneuver to COI S.2.1 WSSN Agent CPU 4.3.3 Maneuver to COI S.2.3 WSSN Agent Detection Sensors 4.3.3 Maneuver to COI S.2.5 WSSN Motors
	← Required Data Type	4.2 Process Tasking Order S.2 WSSN Agent 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
4.4 Respond to WSSN Tasking Order	← COI Color Data	4.3.4.2 Collect COI Color S.2.1 WSSN Agent CPU 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor
	← COI Image Data	4.3.4.1 Collect COI Image S.2.1 WSSN Agent CPU 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor
	← Data Collection Complete	4.3.4.2 Collect COI Color S.2.1 WSSN Agent CPU 4.3 Execute WSSN Tasking Order S.2 WSSN Agent 4.3.4 Collect COI Data S.2.1 WSSN Agent CPU 4.3.4 Collect COI Data S.2.2 WSSN Agent Collection Sensors

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		4.3.4.1 Collect COI Image S.2.1 WSSN Agent CPU 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor
4.4.1 Generate WSSN Tasking Order Response	→ WSSN Tasking Order Response	4.4.2 Send WSSN Tasking Order Response to WSSN C2 HW.3 (Dell PC) Camera Node Command Center 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.1 WSSN Agent CPU 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.4 WSSN Agent Comms 4.4.3 Receive WSSN Tasking Order Response from WSSN HW.3 (Dell PC) Camera Node Command Center 4.4.3 Receive WSSN Tasking Order Response from WSSN S.1.2 WSSN C2 Node Comms 4.4.4 Process WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center
	→ WSSN Tasking Order Response Ready to Send	4.4.2 Send WSSN Tasking Order Response to WSSN C2 HW.3 (Dell PC) Camera Node Command Center 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.1 WSSN Agent CPU 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.4 WSSN Agent Comms
	← COI Color Data	4.3.4.2 Collect COI Color S.2.1 WSSN Agent CPU 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
	← COI Image Data	4.3.4.1 Collect COI Image S.2.1 WSSN Agent CPU 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor
	← Data Collection Complete	4.3.4.2 Collect COI Color S.2.1 WSSN Agent CPU 4.3 Execute WSSN Tasking Order S.2 WSSN Agent 4.3.4 Collect COI Data S.2.1 WSSN Agent CPU 4.3.4 Collect COI Data S.2.2 WSSN Agent Collection Sensors 4.3.4.1 Collect COI Image S.2.1 WSSN Agent CPU 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor
4.4.2 Send WSSN Tasking Order Response to WSSN C2	→ WSSN C2 Comms Request	4.4.3 Receive WSSN Tasking Order Response from WSSN HW.3 (Dell PC) Camera Node Command Center 4.4.3 Receive WSSN Tasking Order Response from WSSN S.1.2 WSSN C2 Node Comms
	← WSSN Tasking Order Response	4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
	← WSSN Tasking Order Response Ready to Send	4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
4.4.3 Receive WSSN Tasking Order Response from WSSN	→ WSSN Tasking Order Response Received	4.4.4 Process WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center
	← WSSN C2 Comms Request	4.4.2 Send WSSN Tasking Order Response to WSSN C2 HW.3 (Dell PC) Camera Node Command Center 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.1 WSSN Agent CPU 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.4 WSSN Agent Comms
	← WSSN Tasking Order Response	4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
4.4.4 Process WSSN Tasking Order Response	← WSSN Tasking Order Response	4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
	← WSSN Tasking Order Response Received	4.4.3 Receive WSSN Tasking Order Response from WSSN HW.3 (Dell PC) Camera Node Command Center 4.4.3 Receive WSSN Tasking Order Response from WSSN S.1.2 WSSN C2 Node Comms
Ext.1 Analyze WSSN Tasking Order Response Data	← WSSN Task Order Response Data	4.0 Respond S.2 WSSN Agent 4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		Order S.2 WSSN Agent 4.4.4 Process WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center
O Perform Overhead Functions [UUV-FCN-0020]	→ BIT Status Response [UUV-ITM-0015]	4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU
	→ Feedback Provided.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence S.5 WILIFE COTS SW
O.1 Perform Startup [UUV-FCN-0022]	→ Feedback Provided.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence S.5 WILIFE COTS SW
O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]	→ BIT Status Response [UUV-ITM-0015]	4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU
O.4 Perform User Interface Functions	→ Feedback Provided.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence S.5 WILIFE COTS SW
O.5 Perform Shut Down [UUV-FCN-0058]	→ Feedback Provided.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence S.5 WILIFE COTS SW
O.6 Initialize WSSN Agent	→ BIT Status Response [UUV-ITM-0015]	4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU
O.6.1.1 Perform Diagnostics	→ Diags SAT	4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU O.6.1.2 Designate Primary Tasking S.2.1 WSSN Agent CPU
O.6.1.2 Designate Primary Tasking	→ Pri Tasking	O.6.3 Enter WSSN Tasking Order Receive Mode S.2.1 WSSN Agent CPU

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Table 72 P Electrical Power External I/O

Functions	Interface Items	Interfacing Elements
		O.6.3 Enter WSSN Tasking Order Receive Mode S.2.4 WSSN Agent Comms
	← Diags SAT	O.6.1.1 Perform Diagnostics S.2.1 WSSN Agent CPU O.6.1.1 Perform Diagnostics S.2.2 WSSN Agent Collection Sensors O.6.1.1 Perform Diagnostics S.2.3 WSSN Agent Detection Sensors
O.6.3 Enter WSSN Tasking Order Receive Mode	→ BIT Status Response [UUV-ITM-0015]	4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU
	← Pri Tasking	O.6.1.2 Designate Primary Tasking S.2.1 WSSN Agent CPU

Table 73 S Software Suite External I/O

Functions	Interface Items	Interfacing Elements
O Perform Overhead Functions [UUV-FCN-0020]	→ BIT Status Response [UUV-ITM-0015]	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.1 Determine Own Battery Voltage P Electrical Power 4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU
	→ Feedback Provided.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power

Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
3.0 Classify (Conduct Behavior Analysis)	→ Alert Message.NAE.07	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	→ WSSN Tasking Order Data	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.2 Generate WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.1.2 Generate WSSN Tasking Order P Electrical Power 4.1.3 Send WSSN Tasking Order to WSSN HW.3 (Dell PC) Camera Node Command Center 4.1.3 Send WSSN Tasking Order to WSSN P Electrical Power 4.1.3 Send WSSN Tasking Order to WSSN S.1.2 WSSN C2 Node Comms
	← Target Track Data	2.0 Track

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		S.4 MS SQL SERVER 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track P Electrical Power 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track T.1 Blob Tracker 2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
3.1 Read Contact Data Files	→ Environment Map Data	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.2.5 Calculate Costs P Electrical Power
	→ Stored Behavior Files	3.2 Analyze Behavior

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2.2 Read Stored Behavior Sequences B.1 BAM Behavior Analyzer 3.2.2 Read Stored Behavior Sequences HW.1 Mac Server 3.2.2 Read Stored Behavior Sequences P Electrical Power
	→ Target Track Files	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2.1 Read Observed Sequence B.1 BAM Behavior Analyzer 3.2.1 Read Observed Sequence HW.1 Mac Server 3.2.1 Read Observed Sequence P Electrical Power
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Target Track Data	2.0 Track S.4 MS SQL SERVER 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		2.0 Track P Electrical Power 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track T.1 Blob Tracker 2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
3.2 Analyze Behavior	→ Behavior Cost Thresholds	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power
	→ Cost Matrix Array	3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		HW.1 Mac Server 3.2.5 Calculate Costs P Electrical Power 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power
	→ Threat Evaluation.NAE.07	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← Environment Map Data	3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← Stored Behavior Files	3.2.1 Read Observed Sequence HW.1 Mac Server 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER 3.2.1 Read Observed Sequence B.1 BAM Behavior Analyzer 3.2.1 Read Observed Sequence

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power
	← Target Track Files	3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
3.2.1 Read Observed Sequence	→ Stored Behavior Files	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2.2 Read Stored Behavior Sequences B.1 BAM Behavior Analyzer 3.2.2 Read Stored Behavior Sequences HW.1 Mac Server 3.2.2 Read Stored Behavior Sequences P Electrical Power
	← Target Track Files	3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
3.2.2 Read Stored Behavior Sequences	→ Stored Behavior Array	3.2.3 Build Production Matrix B.1 BAM Behavior Analyzer 3.2.3 Build Production Matrix HW.1 Mac Server 3.2.3 Build Production Matrix P Electrical Power

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix HW.1 Mac Server 3.2.4 Build Cost Matrix P Electrical Power
	← Stored Behavior Files	3.2.1 Read Observed Sequence HW.1 Mac Server 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER 3.2.1 Read Observed Sequence B.1 BAM Behavior Analyzer 3.2.1 Read Observed Sequence P Electrical Power
3.2.3 Build Production Matrix	→ Production Matrix Array	3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix HW.1 Mac Server 3.2.4 Build Cost Matrix P Electrical Power 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.2.5 Calculate Costs P Electrical Power
	← Observed Sequence Array	3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power
	← Stored Behavior Array	3.2.2 Read Stored Behavior Sequences

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		B.1 BAM Behavior Analyzer 3.2.2 Read Stored Behavior Sequences HW.1 Mac Server 3.2.2 Read Stored Behavior Sequences P Electrical Power
3.2.4 Build Cost Matrix	→ Cost Matrix Array	3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.2.5 Calculate Costs P Electrical Power 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power
	← Production Matrix Array	3.2.3 Build Production Matrix B.1 BAM Behavior Analyzer 3.2.3 Build Production Matrix HW.1 Mac Server 3.2.3 Build Production Matrix P Electrical Power
	← Stored Behavior Array	3.2.2 Read Stored Behavior Sequences B.1 BAM Behavior Analyzer 3.2.2 Read Stored Behavior

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		Sequences HW.1 Mac Server 3.2.2 Read Stored Behavior Sequences P Electrical Power
3.2.5 Calculate Costs	→ Behavior Cost Thresholds	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power
	→ Threat Evaluation.NAE.07	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.4 Perform I&W

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← Cost Matrix Array	3.2.4 Build Cost Matrix P Electrical Power 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix HW.1 Mac Server
	← Environment Map Data	3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		S.4 MS SQL SERVER
	← Production Matrix Array	3.2.3 Build Production Matrix B.1 BAM Behavior Analyzer 3.2.3 Build Production Matrix HW.1 Mac Server 3.2.3 Build Production Matrix P Electrical Power
3.3 Perform Contact Classification	→ Assign Track Category.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	→ Track confirmed to be Target of Interest.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	← Behavior Cost Thresholds	3.2.5 Calculate Costs P Electrical Power 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server
	← Cost Matrix Array	3.2.4 Build Cost Matrix P Electrical Power 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix HW.1 Mac Server
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs P Electrical Power 3.2 Analyze Behavior

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
3.3.1 Classify Normal	→ Assign Track Category.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		and Assessment S.4 MS SQL SERVER
	→ Observed Sequence Array	3.2.3 Build Production Matrix B.1 BAM Behavior Analyzer 3.2.3 Build Production Matrix HW.1 Mac Server 3.2.3 Build Production Matrix P Electrical Power
	← Behavior Cost Thresholds	3.2.5 Calculate Costs P Electrical Power 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server
	← Cost Matrix Array	3.2.4 Build Cost Matrix P Electrical Power 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix HW.1 Mac Server
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs P Electrical Power 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		3.2 Analyze Behavior P Electrical Power 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
3.3.2 Classify Abnormal	→ Assign Track Category.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	→ Track confirmed to be Target of	3.4 Perform I&W

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
	Interest.NAE.07	HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	← Behavior Cost Thresholds	3.2.5 Calculate Costs P Electrical Power 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server
	← Cost Matrix Array	3.2.4 Build Cost Matrix P Electrical Power 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		3.2 Analyze Behavior P Electrical Power 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix HW.1 Mac Server
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs P Electrical Power 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
3.3.3 Classify Unknown	→ Assign Track Category.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	→ Track confirmed to be Target of Interest.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	← Behavior Cost Thresholds	3.2.5 Calculate Costs P Electrical Power 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		3.2 Analyze Behavior P Electrical Power 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server
	← Cost Matrix Array	3.2.4 Build Cost Matrix P Electrical Power 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2.4 Build Cost Matrix B.1 BAM Behavior Analyzer 3.2.4 Build Cost Matrix HW.1 Mac Server
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs P Electrical Power 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
3.4 Perform I&W	→ Alert Message.NAE.07	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	← Assign Track Category.NAE.07	3.3.2 Classify Abnormal P Electrical Power 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs P Electrical Power

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	← Track confirmed to be Target of Interest.NAE.07	3.3.3 Classify Unknown P Electrical Power 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.3 Classify Unknown HW.1 Mac Server
3.4.1 Perform Situational Analysis and Assessment	→ Defined Threat Behavior	3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	→ Threat Not Negated.NAE.07	3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	← Assign Track Category.NAE.07	3.3.2 Classify Abnormal P Electrical Power 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power
	← Track confirmed to be Target of Interest.NAE.07	3.3.3 Classify Unknown P Electrical Power 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3.2 Classify Abnormal HW.1 Mac Server

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Table 74 S.1 MATLAB External I/O

Functions	Interface Items	Interfacing Elements
		3.3.2 Classify Abnormal P Electrical Power 3.3.3 Classify Unknown HW.1 Mac Server

Table 75 S.1.2 WSSN C2 Node Comms External I/O

Functions	Interface Items	Interfacing Elements
4.1.1 Receive WSSN Tasking Order Data from Watchman Server	→ WSSN Tasking Order Data Received	4.1.2 Generate WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.1.2 Generate WSSN Tasking Order P Electrical Power
	← Alert Message.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W

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Table 75 S.1.2 WSSN C2 Node Comms External I/O

Functions	Interface Items	Interfacing Elements
		S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
4.1.3 Send WSSN Tasking Order to WSSN	→ WSSN Tasking Order	4.2 Process Tasking Order P Electrical Power 4.2 Process Tasking Order S.2 WSSN Agent 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
	← WSSN Tasking Order Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER
	← WSSN Tasking Order Ready for	4.1.2 Generate WSSN Tasking

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Table 75 S.1.2 WSSN C2 Node Comms External I/O

Functions	Interface Items	Interfacing Elements
	Send	Order HW.3 (Dell PC) Camera Node Command Center 4.1.2 Generate WSSN Tasking Order P Electrical Power
4.4.3 Receive WSSN Tasking Order Response from WSSN	→ WSSN Tasking Order Response Received	4.4.4 Process WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.4 Process WSSN Tasking Order Response P Electrical Power
	← WSSN C2 Comms Request	4.4.2 Send WSSN Tasking Order Response to WSSN C2 HW.3 (Dell PC) Camera Node Command Center 4.4.2 Send WSSN Tasking Order Response to WSSN C2 P Electrical Power 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.1 WSSN Agent CPU 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.4 WSSN Agent Comms
	← WSSN Tasking Order Response	4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU

Table 76 S.2 MATLAB/SIMULINK External I/O

Functions	Interface Items	Interfacing Elements
2.0 Track	→ Target Track Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module

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Table 76 S.2 MATLAB/SIMULINK External I/O

Functions	Interface Items	Interfacing Elements
		3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Video Data	1.3 Collect Video Data P Electrical Power 1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.0 Detect S.5 WILIFE COTS SW

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Table 76 S.2 MATLAB/SIMULINK External I/O

Functions	Interface Items	Interfacing Elements
		1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data S.5 WILIFE COTS SW
2.1 Read Video Data	→ Video Data Files	2.2 Process Video Data HW.3 (Dell PC) Camera Node Command Center 2.2 Process Video Data P Electrical Power
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Video Data	1.3 Collect Video Data P Electrical Power 1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data S.5 WILIFE COTS SW
2.2 Process Video Data	→ EO-IR Mission Data	2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track

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Table 76 S.2 MATLAB/SIMULINK External I/O

Functions	Interface Items	Interfacing Elements
		S.4 MS SQL SERVER
	→ Processed Video Data	2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.4 MS SQL SERVER
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Video Data Files	2.1 Read Video Data HW.3 (Dell PC) Camera Node Command Center 2.1 Read Video Data P Electrical Power
2.3 Build Contact Track	→ Target Track Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files

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Table 76 S.2 MATLAB/SIMULINK External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← EO-IR Mission Data	1.4 Store Video Data P Electrical Power 1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.4 Store Video Data HW.3 (Dell PC) Camera Node Command Center 1.4 Store Video Data S.5 WILIFE COTS SW 2.2 Process Video Data HW.3 (Dell PC) Camera Node Command Center 2.2 Process Video Data P Electrical Power
	← Processed Video Data	2.2 Process Video Data HW.3 (Dell PC) Camera Node Command Center 2.2 Process Video Data P Electrical Power

Table 77 S.2 WSSN Agent External I/O

Functions	Interface Items	Interfacing Elements
4.0 Respond	→ WSSN Task Order Response Data	Ext.1 Analyze WSSN Tasking Order Response Data P Electrical Power

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Table 77 S.2 WSSN Agent External I/O

Functions	Interface Items	Interfacing Elements
	← Alert Message.NAE.07	3.4 Perform I&W HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← WSSN Tasking Order Data	3.0 Classify (Conduct Behavior Analysis)

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Table 77 S.2 WSSN Agent External I/O

Functions	Interface Items	Interfacing Elements
		B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER
4.2 Process Tasking Order	→ Contact Position	4.3 Execute WSSN Tasking Order P Electrical Power 4.3.1 Navigate to COI Zone P Electrical Power
	→ Required Data Type	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.1 Determine Own Battery Voltage P Electrical Power 4.3 Execute WSSN Tasking Order P Electrical Power 4.3.4 Collect COI Data P Electrical Power 4.3.4.1 Collect COI Image P Electrical Power 4.3.4.2 Collect COI Color P Electrical Power 4.3.4.3 Collect COI Video P Electrical Power
	← WSSN Tasking Order	4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.3 Send WSSN Tasking Order to WSSN HW.3 (Dell PC) Camera Node

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Table 77 S.2 WSSN Agent External I/O

Functions	Interface Items	Interfacing Elements
		Command Center 4.1.3 Send WSSN Tasking Order to WSSN P Electrical Power 4.1.3 Send WSSN Tasking Order to WSSN S.1.2 WSSN C2 Node Comms
4.3 Execute WSSN Tasking Order	→ Data Collection Complete	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order P Electrical Power 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power
	← Contact Position	4.2 Process Tasking Order P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power
	← Required Data Type	4.2 Process Tasking Order P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power
	← Task Agent Designation	4.2.2.4 Compare Battery Voltages P Electrical Power 4.2.3 Determine Task Agent P Electrical Power
4.4 Respond to WSSN Tasking Order	→ WSSN Task Order Response Data	Ext.1 Analyze WSSN Tasking Order Response Data P Electrical Power
	← COI Color Data	4.3.4.2 Collect COI Color P Electrical Power

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Table 77 S.2 WSSN Agent External I/O

Functions	Interface Items	Interfacing Elements
	← COI Image Data	4.3.4.1 Collect COI Image P Electrical Power
	← Data Collection Complete	4.3 Execute WSSN Tasking Order P Electrical Power 4.3.4 Collect COI Data P Electrical Power 4.3.4.1 Collect COI Image P Electrical Power 4.3.4.2 Collect COI Color P Electrical Power
O.6 Initialize WSSN Agent	→ BIT Status Response [UUV-ITM-0015]	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.1 Determine Own Battery Voltage P Electrical Power

Table 78 S.2.1 WSSN Agent CPU External I/O

Functions	Interface Items	Interfacing Elements
4.2.1 Receive WSSN Tasking Order from WSSN C2	→ Contact Position	4.3 Execute WSSN Tasking Order P Electrical Power 4.3.1 Navigate to COI Zone P Electrical Power 4.3.1 Navigate to COI Zone S.2.3 WSSN Agent Detection Sensors 4.3.1 Navigate to COI Zone S.2.5 WSSN Motors
	→ Required Data Type	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.1 Determine Own Battery Voltage P Electrical Power 4.3 Execute WSSN Tasking Order P Electrical Power 4.3.4 Collect COI Data P Electrical Power 4.3.4 Collect COI Data S.2.2 WSSN Agent Collection Sensors

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Table 78 S.2.1 WSSN Agent CPU External I/O

Functions	Interface Items	Interfacing Elements
		4.3.4.1 Collect COI Image P Electrical Power 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor 4.3.4.2 Collect COI Color P Electrical Power 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor 4.3.4.3 Collect COI Video P Electrical Power 4.3.4.3 Collect COI Video S.2.2.1 Image Sensor
	← WSSN Tasking Order	4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.3 Send WSSN Tasking Order to WSSN HW.3 (Dell PC) Camera Node Command Center 4.1.3 Send WSSN Tasking Order to WSSN P Electrical Power 4.1.3 Send WSSN Tasking Order to WSSN S.1.2 WSSN C2 Node Comms
4.2.2.1 Determine Own Battery Voltage	→ Own Battery Voltage	4.2.2.2 Send Own Battery Voltage to Other Agent P Electrical Power 4.2.2.2 Send Own Battery Voltage to Other Agent S.2.4 WSSN Agent Comms 4.2.2.4 Compare Battery Voltages P Electrical Power 4.2.3 Determine Task Agent P Electrical Power
	← BIT Status Response [UUV-ITM-0015]	O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023]

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Table 78 S.2.1 WSSN Agent CPU External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power O Perform Overhead Functions [UUV-FCN-0020] HW Hardware Suite O Perform Overhead Functions [UUV-FCN-0020] HW.1 Mac Server O Perform Overhead Functions [UUV-FCN-0020] P Electrical Power O Perform Overhead Functions [UUV-FCN-0020] S Software Suite O.2 Perform Vehicle Subsystem BIT [UUV-FCN-0023] HW.1 Mac Server O.6 Initialize WSSN Agent P Electrical Power O.6.3 Enter WSSN Tasking Order Receive Mode P Electrical Power O.6.3 Enter WSSN Tasking Order Receive Mode S.2.4 WSSN Agent Comms
	← Diags SAT	O.6.1.1 Perform Diagnostics P Electrical Power O.6.1.1 Perform Diagnostics S.2.2 WSSN Agent Collection Sensors O.6.1.1 Perform Diagnostics S.2.3 WSSN Agent Detection Sensors
	← Required Data Type	4.2 Process Tasking Order P Electrical Power 4.2.1 Receive WSSN Tasking Order

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Table 78 S.2.1 WSSN Agent CPU External I/O

Functions	Interface Items	Interfacing Elements
		from WSSN C2 P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
4.2.2.2 Send Own Battery Voltage to Other Agent	→ Own Battery Voltage Sent	4.2.2.3 Receive Battery Voltage from Other Agent P Electrical Power 4.2.2.3 Receive Battery Voltage from Other Agent S.2.4 WSSN Agent Comms
	← Own Battery Voltage	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.1 Determine Own Battery Voltage P Electrical Power
4.2.2.3 Receive Battery Voltage from Other Agent	→ Other Battery Voltage	4.2.2.4 Compare Battery Voltages P Electrical Power 4.2.3 Determine Task Agent P Electrical Power
	← Own Battery Voltage Sent	4.2.2.2 Send Own Battery Voltage to Other Agent P Electrical Power 4.2.2.2 Send Own Battery Voltage to Other Agent S.2.4 WSSN Agent Comms
4.2.2.4 Compare Battery Voltages	→ Task Agent Designation	4.3 Execute WSSN Tasking Order P Electrical Power 4.3.1 Navigate to COI Zone P Electrical Power 4.3.1 Navigate to COI Zone S.2.3 WSSN Agent Detection Sensors 4.3.1 Navigate to COI Zone S.2.5 WSSN Motors
	← Other Battery Voltage	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.3 Receive Battery Voltage from Other Agent P Electrical Power

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Table 78 S.2.1 WSSN Agent CPU External I/O

Functions	Interface Items	Interfacing Elements
		4.2.2.3 Receive Battery Voltage from Other Agent S.2.4 WSSN Agent Comms
	← Own Battery Voltage	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.1 Determine Own Battery Voltage P Electrical Power
4.2.3 Determine Task Agent	→ Task Agent Designation	4.3 Execute WSSN Tasking Order P Electrical Power 4.3.1 Navigate to COI Zone P Electrical Power 4.3.1 Navigate to COI Zone S.2.3 WSSN Agent Detection Sensors 4.3.1 Navigate to COI Zone S.2.5 WSSN Motors
	← Other Battery Voltage	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.3 Receive Battery Voltage from Other Agent P Electrical Power 4.2.2.3 Receive Battery Voltage from Other Agent S.2.4 WSSN Agent Comms
	← Own Battery Voltage	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.1 Determine Own Battery Voltage P Electrical Power
4.3.1 Navigate to COI Zone	→ Agent at COI Zone	4.3.2 Detect COI P Electrical Power 4.3.2 Detect COI S.2.3 WSSN Agent Detection Sensors
	← Contact Position	4.2 Process Tasking Order P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power

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Table 78 S.2.1 WSSN Agent CPU External I/O

Functions	Interface Items	Interfacing Elements
		4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
	← Task Agent Designation	4.2.2.4 Compare Battery Voltages P Electrical Power 4.2.3 Determine Task Agent P Electrical Power
4.3.2 Detect COI	→ Contact Detected	4.3.3 Maneuver to COI P Electrical Power 4.3.3 Maneuver to COI S.2.3 WSSN Agent Detection Sensors 4.3.3 Maneuver to COI S.2.5 WSSN Motors
	← Agent at COI Zone	4.3.1 Navigate to COI Zone P Electrical Power 4.3.1 Navigate to COI Zone S.2.3 WSSN Agent Detection Sensors 4.3.1 Navigate to COI Zone S.2.5 WSSN Motors
4.3.3 Maneuver to COI	→ COI in Range	4.3.4 Collect COI Data P Electrical Power 4.3.4 Collect COI Data S.2.2 WSSN Agent Collection Sensors 4.3.4.1 Collect COI Image P Electrical Power 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor 4.3.4.2 Collect COI Color P Electrical Power 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor 4.3.4.3 Collect COI Video P Electrical Power 4.3.4.3 Collect COI Video S.2.2.1 Image Sensor

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Table 78 S.2.1 WSSN Agent CPU External I/O

Functions	Interface Items	Interfacing Elements
	← Contact Detected	4.3.2 Detect COI P Electrical Power 4.3.2 Detect COI S.2.3 WSSN Agent Detection Sensors
4.3.4 Collect COI Data	→ Data Collection Complete	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order P Electrical Power 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power
	← COI in Range	4.3.3 Maneuver to COI P Electrical Power 4.3.3 Maneuver to COI S.2.3 WSSN Agent Detection Sensors 4.3.3 Maneuver to COI S.2.5 WSSN Motors
	← Required Data Type	4.2 Process Tasking Order P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
4.3.4.1 Collect COI Image	→ COI Image Data	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order P Electrical Power

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Table 78 S.2.1 WSSN Agent CPU External I/O

Functions	Interface Items	Interfacing Elements
		4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power
	→ Data Collection Complete	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order P Electrical Power 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power
	← COI in Range	4.3.3 Maneuver to COI P Electrical Power 4.3.3 Maneuver to COI S.2.3 WSSN Agent Detection Sensors 4.3.3 Maneuver to COI S.2.5 WSSN Motors
	← Required Data Type	4.2 Process Tasking Order P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
4.3.4.2 Collect COI Color	→ COI Color Data	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking

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Table 78 S.2.1 WSSN Agent CPU External I/O

Functions	Interface Items	Interfacing Elements
		Order P Electrical Power 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power
	→ Data Collection Complete	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order P Electrical Power 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power
	← COI in Range	4.3.3 Maneuver to COI P Electrical Power 4.3.3 Maneuver to COI S.2.3 WSSN Agent Detection Sensors 4.3.3 Maneuver to COI S.2.5 WSSN Motors
	← Required Data Type	4.2 Process Tasking Order P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
4.3.4.3 Collect COI Video	← COI in Range	4.3.3 Maneuver to COI P Electrical Power 4.3.3 Maneuver to COI

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Table 78 S.2.1 WSSN Agent CPU External I/O

Functions	Interface Items	Interfacing Elements
		S.2.3 WSSN Agent Detection Sensors 4.3.3 Maneuver to COI S.2.5 WSSN Motors
	← Required Data Type	4.2 Process Tasking Order P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
4.4.1 Generate WSSN Tasking Order Response	→ WSSN Tasking Order Response	4.4.2 Send WSSN Tasking Order Response to WSSN C2 HW.3 (Dell PC) Camera Node Command Center 4.4.2 Send WSSN Tasking Order Response to WSSN C2 P Electrical Power 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.4 WSSN Agent Comms 4.4.3 Receive WSSN Tasking Order Response from WSSN HW.3 (Dell PC) Camera Node Command Center 4.4.3 Receive WSSN Tasking Order Response from WSSN P Electrical Power 4.4.3 Receive WSSN Tasking Order Response from WSSN S.1.2 WSSN C2 Node Comms 4.4.4 Process WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.4 Process WSSN Tasking Order Response P Electrical Power
	→ WSSN Tasking Order Response Ready to Send	4.4.2 Send WSSN Tasking Order Response to WSSN C2 HW.3 (Dell PC) Camera Node

Table 78 S.2.1 WSSN Agent CPU External I/O

Functions	Interface Items	Interfacing Elements
		Command Center 4.4.2 Send WSSN Tasking Order Response to WSSN C2 P Electrical Power 4.4.2 Send WSSN Tasking Order Response to WSSN C2 S.2.4 WSSN Agent Comms
	← COI Color Data	4.3.4.2 Collect COI Color P Electrical Power 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor
	← COI Image Data	4.3.4.1 Collect COI Image P Electrical Power 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor
	← Data Collection Complete	4.3.4.2 Collect COI Color P Electrical Power 4.3 Execute WSSN Tasking Order P Electrical Power 4.3.4 Collect COI Data P Electrical Power 4.3.4 Collect COI Data S.2.2 WSSN Agent Collection Sensors 4.3.4.1 Collect COI Image P Electrical Power 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor
4.4.2 Send WSSN Tasking Order Response to WSSN C2	→ WSSN C2 Comms Request	4.4.3 Receive WSSN Tasking Order Response from WSSN HW.3 (Dell PC) Camera Node Command Center 4.4.3 Receive WSSN Tasking Order Response from WSSN P Electrical Power 4.4.3 Receive WSSN Tasking Order Response from WSSN S.1.2 WSSN C2 Node Comms

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Table 78 S.2.1 WSSN Agent CPU External I/O

Functions	Interface Items	Interfacing Elements
	← WSSN Tasking Order Response	4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power
	← WSSN Tasking Order Response Ready to Send	4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power
O.6.1.1 Perform Diagnostics	→ Diags SAT	4.2.2.1 Determine Own Battery Voltage P Electrical Power O.6.1.2 Designate Primary Tasking P Electrical Power
O.6.1.2 Designate Primary Tasking	→ Pri Tasking	O.6.3 Enter WSSN Tasking Order Receive Mode P Electrical Power O.6.3 Enter WSSN Tasking Order Receive Mode S.2.4 WSSN Agent Comms
	← Diags SAT	O.6.1.1 Perform Diagnostics P Electrical Power O.6.1.1 Perform Diagnostics S.2.2 WSSN Agent Collection Sensors O.6.1.1 Perform Diagnostics S.2.3 WSSN Agent Detection Sensors
O.6.3 Enter WSSN Tasking Order Receive Mode	→ BIT Status Response [UUV-ITM-0015]	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.1 Determine Own Battery Voltage P Electrical Power
	← Pri Tasking	O.6.1.2 Designate Primary Tasking P Electrical Power

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Table 79 S.2.2 WSSN Agent Collection Sensors External I/O

Functions	Interface Items	Interfacing Elements
4.3.4 Collect COI Data	→ Data Collection Complete	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order P Electrical Power 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
	← COI in Range	4.3.3 Maneuver to COI P Electrical Power 4.3.3 Maneuver to COI S.2.1 WSSN Agent CPU 4.3.3 Maneuver to COI S.2.3 WSSN Agent Detection Sensors 4.3.3 Maneuver to COI S.2.5 WSSN Motors
	← Required Data Type	4.2 Process Tasking Order P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
O.6.1.1 Perform Diagnostics	→ Diags SAT	4.2.2.1 Determine Own Battery Voltage P Electrical Power 4.2.2.1 Determine Own Battery

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Table 79 S.2.2 WSSN Agent Collection Sensors External I/O

Functions	Interface Items	Interfacing Elements
		Voltage S.2.1 WSSN Agent CPU O.6.1.2 Designate Primary Tasking P Electrical Power O.6.1.2 Designate Primary Tasking S.2.1 WSSN Agent CPU

Table 80 S.2.2.1 Image Sensor External I/O

Functions	Interface Items	Interfacing Elements
4.3.4.1 Collect COI Image	→ COI Image Data	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order P Electrical Power 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
	→ Data Collection Complete	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order P Electrical Power 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power 4.4.1 Generate WSSN Tasking

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Table 80 S.2.2.1 Image Sensor External I/O

Functions	Interface Items	Interfacing Elements
		Order Response S.2.1 WSSN Agent CPU
	← COI in Range	4.3.3 Maneuver to COI P Electrical Power 4.3.3 Maneuver to COI S.2.1 WSSN Agent CPU 4.3.3 Maneuver to COI S.2.3 WSSN Agent Detection Sensors 4.3.3 Maneuver to COI S.2.5 WSSN Motors
	← Required Data Type	4.2 Process Tasking Order P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
4.3.4.3 Collect COI Video	← COI in Range	4.3.3 Maneuver to COI P Electrical Power 4.3.3 Maneuver to COI S.2.1 WSSN Agent CPU 4.3.3 Maneuver to COI S.2.3 WSSN Agent Detection Sensors 4.3.3 Maneuver to COI S.2.5 WSSN Motors
	← Required Data Type	4.2 Process Tasking Order P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order

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Table 80 S.2.2.1 Image Sensor External I/O

Functions	Interface Items	Interfacing Elements
		from WSSN C2 S.2.4 WSSN Agent Comms

Table 81 S.2.2.2 Color Sensor External I/O

Functions	Interface Items	Interfacing Elements
4.3.4.2 Collect COI Color	→ COI Color Data	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order P Electrical Power 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
	→ Data Collection Complete	4.4 Respond to WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.4 Respond to WSSN Tasking Order P Electrical Power 4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
	← COI in Range	4.3.3 Maneuver to COI P Electrical Power

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Table 81 S.2.2.2 Color Sensor External I/O

Functions	Interface Items	Interfacing Elements
		4.3.3 Maneuver to COI S.2.1 WSSN Agent CPU 4.3.3 Maneuver to COI S.2.3 WSSN Agent Detection Sensors 4.3.3 Maneuver to COI S.2.5 WSSN Motors
	← Required Data Type	4.2 Process Tasking Order P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms

Table 82 S.2.3 WSSN Agent Detection Sensors External I/O

Functions	Interface Items	Interfacing Elements
4.3.1 Navigate to COI Zone	→ Agent at COI Zone	4.3.2 Detect COI P Electrical Power 4.3.2 Detect COI S.2.1 WSSN Agent CPU
	← Contact Position	4.2 Process Tasking Order P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
	← Task Agent Designation	4.2.2.4 Compare Battery Voltages P Electrical Power 4.2.2.4 Compare Battery Voltages

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Table 82 S.2.3 WSSN Agent Detection Sensors External I/O

Functions	Interface Items	Interfacing Elements
		S.2.1 WSSN Agent CPU 4.2.3 Determine Task Agent P Electrical Power 4.2.3 Determine Task Agent S.2.1 WSSN Agent CPU
4.3.2 Detect COI	→ Contact Detected	4.3.3 Maneuver to COI P Electrical Power 4.3.3 Maneuver to COI S.2.1 WSSN Agent CPU 4.3.3 Maneuver to COI S.2.5 WSSN Motors
	← Agent at COI Zone	4.3.1 Navigate to COI Zone P Electrical Power 4.3.1 Navigate to COI Zone S.2.1 WSSN Agent CPU 4.3.1 Navigate to COI Zone S.2.5 WSSN Motors
4.3.3 Maneuver to COI	→ COI in Range	4.3.4 Collect COI Data P Electrical Power 4.3.4 Collect COI Data S.2.1 WSSN Agent CPU 4.3.4 Collect COI Data S.2.2 WSSN Agent Collection Sensors 4.3.4.1 Collect COI Image P Electrical Power 4.3.4.1 Collect COI Image S.2.1 WSSN Agent CPU 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor 4.3.4.2 Collect COI Color P Electrical Power 4.3.4.2 Collect COI Color S.2.1 WSSN Agent CPU 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor 4.3.4.3 Collect COI Video P Electrical Power

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Table 82 S.2.3 WSSN Agent Detection Sensors External I/O

Functions	Interface Items	Interfacing Elements
		4.3.4.3 Collect COI Video S.2.1 WSSN Agent CPU 4.3.4.3 Collect COI Video S.2.2.1 Image Sensor
	← Contact Detected	4.3.2 Detect COI P Electrical Power 4.3.2 Detect COI S.2.1 WSSN Agent CPU
O.6.1.1 Perform Diagnostics	→ Diags SAT	4.2.2.1 Determine Own Battery Voltage P Electrical Power 4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU O.6.1.2 Designate Primary Tasking P Electrical Power O.6.1.2 Designate Primary Tasking S.2.1 WSSN Agent CPU

Table 83 S.2.4 WSSN Agent Comms External I/O

Functions	Interface Items	Interfacing Elements
4.2.1 Receive WSSN Tasking Order from WSSN C2	→ Contact Position	4.3 Execute WSSN Tasking Order P Electrical Power 4.3.1 Navigate to COI Zone P Electrical Power 4.3.1 Navigate to COI Zone S.2.1 WSSN Agent CPU 4.3.1 Navigate to COI Zone S.2.3 WSSN Agent Detection Sensors 4.3.1 Navigate to COI Zone S.2.5 WSSN Motors
	→ Required Data Type	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.1 Determine Own Battery Voltage P Electrical Power 4.2.2.1 Determine Own Battery Voltage

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Table 83 S.2.4 WSSN Agent Comms External I/O

Functions	Interface Items	Interfacing Elements
		S.2.1 WSSN Agent CPU 4.3 Execute WSSN Tasking Order P Electrical Power 4.3.4 Collect COI Data P Electrical Power 4.3.4 Collect COI Data S.2.1 WSSN Agent CPU 4.3.4 Collect COI Data S.2.2 WSSN Agent Collection Sensors 4.3.4.1 Collect COI Image P Electrical Power 4.3.4.1 Collect COI Image S.2.1 WSSN Agent CPU 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor 4.3.4.2 Collect COI Color P Electrical Power 4.3.4.2 Collect COI Color S.2.1 WSSN Agent CPU 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor 4.3.4.3 Collect COI Video P Electrical Power 4.3.4.3 Collect COI Video S.2.1 WSSN Agent CPU 4.3.4.3 Collect COI Video S.2.2.1 Image Sensor
	← WSSN Tasking Order	4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.3 Send WSSN Tasking Order to WSSN HW.3 (Dell PC) Camera Node Command Center 4.1.3 Send WSSN Tasking Order to WSSN

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Table 83 S.2.4 WSSN Agent Comms External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power 4.1.3 Send WSSN Tasking Order to WSSN S.1.2 WSSN C2 Node Comms
4.2.2.2 Send Own Battery Voltage to Other Agent	→ Own Battery Voltage Sent	4.2.2.3 Receive Battery Voltage from Other Agent P Electrical Power 4.2.2.3 Receive Battery Voltage from Other Agent S.2.1 WSSN Agent CPU
	← Own Battery Voltage	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.1 Determine Own Battery Voltage P Electrical Power 4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU
4.2.2.3 Receive Battery Voltage from Other Agent	→ Other Battery Voltage	4.2.2.4 Compare Battery Voltages P Electrical Power 4.2.2.4 Compare Battery Voltages S.2.1 WSSN Agent CPU 4.2.3 Determine Task Agent P Electrical Power 4.2.3 Determine Task Agent S.2.1 WSSN Agent CPU
	← Own Battery Voltage Sent	4.2.2.2 Send Own Battery Voltage to Other Agent P Electrical Power 4.2.2.2 Send Own Battery Voltage to Other Agent S.2.1 WSSN Agent CPU
4.4.2 Send WSSN Tasking Order Response to WSSN C2	→ WSSN C2 Comms Request	4.4.3 Receive WSSN Tasking Order Response from WSSN HW.3 (Dell PC) Camera Node Command Center 4.4.3 Receive WSSN Tasking Order Response from WSSN P Electrical Power 4.4.3 Receive WSSN Tasking Order

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Table 83 S.2.4 WSSN Agent Comms External I/O

Functions	Interface Items	Interfacing Elements
		Response from WSSN S.1.2 WSSN C2 Node Comms
	← WSSN Tasking Order Response	4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
	← WSSN Tasking Order Response Ready to Send	4.4.1 Generate WSSN Tasking Order Response HW.3 (Dell PC) Camera Node Command Center 4.4.1 Generate WSSN Tasking Order Response P Electrical Power 4.4.1 Generate WSSN Tasking Order Response S.2.1 WSSN Agent CPU
O.6.3 Enter WSSN Tasking Order Receive Mode	→ BIT Status Response [UUV-ITM-0015]	4.2.2 Get Battery Voltages P Electrical Power 4.2.2.1 Determine Own Battery Voltage P Electrical Power 4.2.2.1 Determine Own Battery Voltage S.2.1 WSSN Agent CPU
	← Pri Tasking	O.6.1.2 Designate Primary Tasking P Electrical Power O.6.1.2 Designate Primary Tasking S.2.1 WSSN Agent CPU

Table 84 S.2.5 WSSN Motors External I/O

Functions	Interface Items	Interfacing Elements
4.3.1 Navigate to COI Zone	→ Agent at COI Zone	4.3.2 Detect COI P Electrical Power 4.3.2 Detect COI

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Table 84 S.2.5 WSSN Motors External I/O

Functions	Interface Items	Interfacing Elements
		S.2.1 WSSN Agent CPU 4.3.2 Detect COI S.2.3 WSSN Agent Detection Sensors
	← Contact Position	4.2 Process Tasking Order P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 P Electrical Power 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.1 WSSN Agent CPU 4.2.1 Receive WSSN Tasking Order from WSSN C2 S.2.4 WSSN Agent Comms
	← Task Agent Designation	4.2.2.4 Compare Battery Voltages P Electrical Power 4.2.2.4 Compare Battery Voltages S.2.1 WSSN Agent CPU 4.2.3 Determine Task Agent P Electrical Power 4.2.3 Determine Task Agent S.2.1 WSSN Agent CPU
4.3.3 Maneuver to COI	→ COI in Range	4.3.4 Collect COI Data P Electrical Power 4.3.4 Collect COI Data S.2.1 WSSN Agent CPU 4.3.4 Collect COI Data S.2.2 WSSN Agent Collection Sensors 4.3.4.1 Collect COI Image P Electrical Power 4.3.4.1 Collect COI Image S.2.1 WSSN Agent CPU 4.3.4.1 Collect COI Image S.2.2.1 Image Sensor 4.3.4.2 Collect COI Color P Electrical Power 4.3.4.2 Collect COI Color

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Table 84 S.2.5 WSSN Motors External I/O

Functions	Interface Items	Interfacing Elements
		S.2.1 WSSN Agent CPU 4.3.4.2 Collect COI Color S.2.2.2 Color Sensor 4.3.4.3 Collect COI Video P Electrical Power 4.3.4.3 Collect COI Video S.2.1 WSSN Agent CPU 4.3.4.3 Collect COI Video S.2.2.1 Image Sensor
	← Contact Detected	4.3.2 Detect COI P Electrical Power 4.3.2 Detect COI S.2.1 WSSN Agent CPU 4.3.2 Detect COI S.2.3 WSSN Agent Detection Sensors

Table 85 S.3 MS ACCESS External I/O

Functions	Interface Items	Interfacing Elements
2.0 Track	→ Target Track Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files

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Table 85 S.3 MS ACCESS External I/O

Functions	Interface Items	Interfacing Elements
		S.1 MATLAB 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Video Data	1.3 Collect Video Data P Electrical Power 1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data S.5 WILIFE COTS SW
3.1 Read Contact Data Files	→ Environment Map Data	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.2.5 Calculate Costs P Electrical Power

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Table 85 S.3 MS ACCESS External I/O

Functions	Interface Items	Interfacing Elements
		3.2.5 Calculate Costs S.1 MATLAB
	→ Stored Behavior Files	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.2 Read Stored Behavior Sequences B.1 BAM Behavior Analyzer 3.2.2 Read Stored Behavior Sequences HW.1 Mac Server 3.2.2 Read Stored Behavior Sequences P Electrical Power 3.2.2 Read Stored Behavior Sequences S.1 MATLAB
	→ Target Track Files	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.1 Read Observed Sequence B.1 BAM Behavior Analyzer 3.2.1 Read Observed Sequence HW.1 Mac Server 3.2.1 Read Observed Sequence P Electrical Power 3.2.1 Read Observed Sequence S.1 MATLAB
	← Process Signals/Sensor	1.2 Determine Contact Presence

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Table 85 S.3 MS ACCESS External I/O

Functions	Interface Items	Interfacing Elements
	Data.NAE.07	HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Target Track Data	2.0 Track T.1 Blob Tracker 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track P Electrical Power 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.4 MS SQL SERVER 2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
3.4 Perform I&W	→ Alert Message.NAE.07	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.1 Receive WSSN Tasking Order

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Table 85 S.3 MS ACCESS External I/O

Functions	Interface Items	Interfacing Elements
		Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	← Assign Track Category.NAE.07	3.3.1 Classify Normal S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs HW.1 Mac Server 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server

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Table 85 S.3 MS ACCESS External I/O

Functions	Interface Items	Interfacing Elements
		3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.2.5 Calculate Costs S.1 MATLAB 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	← Track confirmed to be Target of Interest.NAE.07	3.3.2 Classify Abnormal S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
3.4.1 Perform Situational Analysis and Assessment	→ Defined Threat Behavior	3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server

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Table 85 S.3 MS ACCESS External I/O

Functions	Interface Items	Interfacing Elements
		3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	→ Threat Not Negated.NAE.07	3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	← Assign Track Category.NAE.07	3.3.1 Classify Normal S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB

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Table 85 S.3 MS ACCESS External I/O

Functions	Interface Items	Interfacing Elements
	← Track confirmed to be Target of Interest.NAE.07	3.3.2 Classify Abnormal S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
3.4.2 Evaluate Threat.NAE.07	→ Threat Evaluation.NAE.07	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server

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Table 85 S.3 MS ACCESS External I/O

Functions	Interface Items	Interfacing Elements
		3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB 3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.4 MS SQL SERVER 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	→ Track Determined to be Threat.NAE.07	3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.4 MS SQL SERVER
	← Defined Threat Behavior	3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment

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Table 85 S.3 MS ACCESS External I/O

Functions	Interface Items	Interfacing Elements
		S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
	← Threat Not Negated.NAE.07	3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.4 MS SQL SERVER
3.4.3 Alert Generation.NAE.07	→ Alert Message.NAE.07	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs HW.1 Mac Server 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior

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Table 85 S.3 MS ACCESS External I/O

Functions	Interface Items	Interfacing Elements
		HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.2.5 Calculate Costs S.1 MATLAB 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER
	← Track Determined to be Threat.NAE.07	3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.4 MS SQL SERVER

Table 86 S.4 MS SQL SERVER External I/O

Functions	Interface Items	Interfacing Elements
2.0 Track	→ Target Track Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) P Electrical Power

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Table 86 S.4 MS SQL SERVER External I/O

Functions	Interface Items	Interfacing Elements
		3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Video Data	1.3 Collect Video Data P Electrical Power 1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data S.5 WILIFE COTS SW
2.3 Build Contact Track	→ Target Track Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior

Table 86 S.4 MS SQL SERVER External I/O

Functions	Interface Items	Interfacing Elements
		Analysis) P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS
	← EO-IR Mission Data	1.4 Store Video Data P Electrical Power 1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.4 Store Video Data HW.3 (Dell PC) Camera Node Command Center 1.4 Store Video Data S.5 WILIFE COTS SW 2.2 Process Video Data HW.3 (Dell PC) Camera Node Command Center 2.2 Process Video Data P Electrical Power 2.2 Process Video Data S.2 MATLAB/SIMULINK
	← Processed Video Data	2.2 Process Video Data HW.3 (Dell PC) Camera Node Command Center

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Table 86 S.4 MS SQL SERVER External I/O

Functions	Interface Items	Interfacing Elements
		2.2 Process Video Data P Electrical Power 2.2 Process Video Data S.2 MATLAB/SIMULINK
3.0 Classify (Conduct Behavior Analysis)	→ Alert Message.NAE.07	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	→ WSSN Tasking Order Data	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.2 Generate WSSN Tasking Order HW.3 (Dell PC) Camera Node Command Center 4.1.2 Generate WSSN Tasking Order P Electrical Power 4.1.3 Send WSSN Tasking Order to

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Table 86 S.4 MS SQL SERVER External I/O

Functions	Interface Items	Interfacing Elements
		WSSN HW.3 (Dell PC) Camera Node Command Center 4.1.3 Send WSSN Tasking Order to WSSN P Electrical Power 4.1.3 Send WSSN Tasking Order to WSSN S.1.2 WSSN C2 Node Comms
	← Target Track Data	2.0 Track T.1 Blob Tracker 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track P Electrical Power 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.2 MATLAB/SIMULINK
3.1 Read Contact Data Files	→ Environment Map Data	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB

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Table 86 S.4 MS SQL SERVER External I/O

Functions	Interface Items	Interfacing Elements
		3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs HW.1 Mac Server 3.2.5 Calculate Costs P Electrical Power 3.2.5 Calculate Costs S.1 MATLAB
	→ Stored Behavior Files	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.2 Read Stored Behavior Sequences B.1 BAM Behavior Analyzer 3.2.2 Read Stored Behavior Sequences HW.1 Mac Server 3.2.2 Read Stored Behavior Sequences P Electrical Power 3.2.2 Read Stored Behavior Sequences S.1 MATLAB
	→ Target Track Files	3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.1 Read Observed Sequence B.1 BAM Behavior Analyzer 3.2.1 Read Observed Sequence

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Table 86 S.4 MS SQL SERVER External I/O

Functions	Interface Items	Interfacing Elements
		HW.1 Mac Server 3.2.1 Read Observed Sequence P Electrical Power 3.2.1 Read Observed Sequence S.1 MATLAB
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Target Track Data	2.0 Track T.1 Blob Tracker 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track P Electrical Power 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.2 MATLAB/SIMULINK
3.4 Perform I&W	→ Alert Message.NAE.07	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN

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Table 86 S.4 MS SQL SERVER External I/O

Functions	Interface Items	Interfacing Elements
		HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	← Assign Track Category.NAE.07	3.3.1 Classify Normal S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs

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Table 86 S.4 MS SQL SERVER External I/O

Functions	Interface Items	Interfacing Elements
		HW.1 Mac Server 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.2.5 Calculate Costs S.1 MATLAB 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS
	← Track confirmed to be Target of Interest.NAE.07	3.3.2 Classify Abnormal S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown

9 Interfaces

Table 86 S.4 MS SQL SERVER External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
3.4.1 Perform Situational Analysis and Assessment	→ Defined Threat Behavior	3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS
	→ Threat Not Negated.NAE.07	3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS
	← Assign Track Category.NAE.07	3.3.1 Classify Normal S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown

9 Interfaces

Table 86 S.4 MS SQL SERVER External I/O

Functions	Interface Items	Interfacing Elements
		HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
	← Track confirmed to be Target of Interest.NAE.07	3.3.2 Classify Abnormal S.1 MATLAB 3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal P Electrical Power 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB
3.4.2 Evaluate Threat.NAE.07	→ Threat Evaluation.NAE.07	3.3 Perform Contact Classification HW.1 Mac Server 3.3 Perform Contact Classification P Electrical Power 3.3 Perform Contact Classification S.1 MATLAB 3.3.1 Classify Normal HW.1 Mac Server 3.3.1 Classify Normal P Electrical Power 3.3.1 Classify Normal S.1 MATLAB 3.3.2 Classify Abnormal HW.1 Mac Server 3.3.2 Classify Abnormal

9 Interfaces

Table 86 S.4 MS SQL SERVER External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power 3.3.2 Classify Abnormal S.1 MATLAB 3.3.3 Classify Unknown HW.1 Mac Server 3.3.3 Classify Unknown P Electrical Power 3.3.3 Classify Unknown S.1 MATLAB 3.4 Perform I&W HW.1 Mac Server 3.4 Perform I&W HW.2 Mac Cinema Displays 3.4 Perform I&W P Electrical Power 3.4 Perform I&W S.1 MATLAB 3.4 Perform I&W S.3 MS ACCESS 3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS
	→ Track Determined to be Threat.NAE.07	3.4.3 Alert Generation.NAE.07 HW.1 Mac Server 3.4.3 Alert Generation.NAE.07 HW.2 Mac Cinema Displays 3.4.3 Alert Generation.NAE.07 P Electrical Power 3.4.3 Alert Generation.NAE.07 S.3 MS ACCESS
	← Defined Threat Behavior	3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server

9 Interfaces

Table 86 S.4 MS SQL SERVER External I/O

Functions	Interface Items	Interfacing Elements
		3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS
	← Threat Not Negated.NAE.07	3.4.1 Perform Situational Analysis and Assessment HW.1 Mac Server 3.4.1 Perform Situational Analysis and Assessment P Electrical Power 3.4.1 Perform Situational Analysis and Assessment S.1 MATLAB 3.4.1 Perform Situational Analysis and Assessment S.3 MS ACCESS
3.4.3 Alert Generation.NAE.07	→ Alert Message.NAE.07	4.0 Respond P Electrical Power 4.0 Respond S.2 WSSN Agent 4.1 Task WSSN HW.3 (Dell PC) Camera Node Command Center 4.1 Task WSSN P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server HW.3 (Dell PC) Camera Node Command Center 4.1.1 Receive WSSN Tasking Order Data from Watchman Server P Electrical Power 4.1.1 Receive WSSN Tasking Order Data from Watchman Server S.1.2 WSSN C2 Node Comms
	← Threat Evaluation.NAE.07	3.2.5 Calculate Costs

9 Interfaces

Table 86 S.4 MS SQL SERVER External I/O

Functions	Interface Items	Interfacing Elements
		HW.1 Mac Server 3.2 Analyze Behavior B.1 BAM Behavior Analyzer 3.2 Analyze Behavior HW.1 Mac Server 3.2 Analyze Behavior P Electrical Power 3.2 Analyze Behavior S.1 MATLAB 3.2.5 Calculate Costs B.1 BAM Behavior Analyzer 3.2.5 Calculate Costs P Electrical Power 3.2.5 Calculate Costs S.1 MATLAB 3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS
	← Track Determined to be Threat.NAE.07	3.4.2 Evaluate Threat.NAE.07 HW.1 Mac Server 3.4.2 Evaluate Threat.NAE.07 HW.2 Mac Cinema Displays 3.4.2 Evaluate Threat.NAE.07 P Electrical Power 3.4.2 Evaluate Threat.NAE.07 S.3 MS ACCESS

Table 87 S.5 WILIFE COTS SW External I/O

Functions	Interface Items	Interfacing Elements
1.0 Detect	→ EO-IR Mission Data	2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node

9 Interfaces

Table 87 S.5 WILIFE COTS SW External I/O

Functions	Interface Items	Interfacing Elements
		Command Center 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
	→ Video Data	1.4 Store Video Data HW.3 (Dell PC) Camera Node Command Center 1.4 Store Video Data P Electrical Power 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track P Electrical Power 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track S.4 MS SQL SERVER 2.0 Track T.1 Blob Tracker 2.1 Read Video Data HW.3 (Dell PC) Camera Node Command Center 2.1 Read Video Data P Electrical Power 2.1 Read Video Data S.2 MATLAB/SIMULINK
	← Infrastructure Elements	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network

9 Interfaces

Table 87 S.5 WILIFE COTS SW External I/O

Functions	Interface Items	Interfacing Elements
		1.5 Manage Video Collection P Electrical Power
	← Sensor Coverage Assignments Assigned.NAE.07	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection P Electrical Power
1.1 Monitor Domain	→ Feedback Provided.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power
	← Infrastructure Elements	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection P Electrical Power
	← Sensor Coverage Assignments Assigned.NAE.07	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection P Electrical Power
1.2 Determine Contact Presence	→ Process Signals/Sensor Data.NAE.07	1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data P Electrical Power 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track P Electrical Power 2.0 Track

9 Interfaces

Table 87 S.5 WILIFE COTS SW External I/O

Functions	Interface Items	Interfacing Elements
		S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track S.4 MS SQL SERVER 2.0 Track T.1 Blob Tracker 2.1 Read Video Data HW.3 (Dell PC) Camera Node Command Center 2.1 Read Video Data P Electrical Power 2.1 Read Video Data S.2 MATLAB/SIMULINK 2.2 Process Video Data HW.3 (Dell PC) Camera Node Command Center 2.2 Process Video Data P Electrical Power 2.2 Process Video Data S.2 MATLAB/SIMULINK 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← Feedback Provided.NAE.07	O.1 Perform Startup [UUV-FCN-0022] HW.1 Mac Server 1.1 Monitor Domain HW.4 IP Camera Network 1.1 Monitor Domain P Electrical Power

9 Interfaces

Table 87 S.5 WILIFE COTS SW External I/O

Functions	Interface Items	Interfacing Elements
		O Perform Overhead Functions [UUV-FCN-0020] HW Hardware Suite O Perform Overhead Functions [UUV-FCN-0020] HW.1 Mac Server O Perform Overhead Functions [UUV-FCN-0020] P Electrical Power O.1 Perform Startup [UUV-FCN-0022] P Electrical Power O.4 Perform User Interface Functions HW.1 Mac Server O.4 Perform User Interface Functions P Electrical Power O.5 Perform Shut Down [UUV-FCN-0058] HW.1 Mac Server O.5 Perform Shut Down [UUV-FCN-0058] P Electrical Power
	← Infrastructure Elements	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection P Electrical Power
	← Sensor Coverage Assignments Assigned.NAE.07	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center

9 Interfaces

Table 87 S.5 WILIFE COTS SW External I/O

Functions	Interface Items	Interfacing Elements
		1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection P Electrical Power
1.3 Collect Video Data	→ Video Data	1.4 Store Video Data HW.3 (Dell PC) Camera Node Command Center 1.4 Store Video Data P Electrical Power 2.0 Track HW.1 Mac Server 2.0 Track HW.3 (Dell PC) Camera Node Command Center 2.0 Track P Electrical Power 2.0 Track S.2 MATLAB/SIMULINK 2.0 Track S.3 MS ACCESS 2.0 Track S.4 MS SQL SERVER 2.0 Track T.1 Blob Tracker 2.1 Read Video Data HW.3 (Dell PC) Camera Node Command Center 2.1 Read Video Data P Electrical Power 2.1 Read Video Data S.2 MATLAB/SIMULINK
	← Infrastructure Elements	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection P Electrical Power
	← Process Signals/Sensor	1.2 Determine Contact Presence

9 Interfaces

Table 87 S.5 WILIFE COTS SW External I/O

Functions	Interface Items	Interfacing Elements
	Data.NAE.07	HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power
	← Sensor Coverage Assignments Assigned.NAE.07	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection P Electrical Power
1.4 Store Video Data	→ EO-IR Mission Data	2.3 Build Contact Track HW.1 Mac Server 2.3 Build Contact Track HW.3 (Dell PC) Camera Node Command Center 2.3 Build Contact Track P Electrical Power 2.3 Build Contact Track S.2 MATLAB/SIMULINK 2.3 Build Contact Track S.4 MS SQL SERVER
	← Infrastructure Elements	1.5 Manage Video Collection HW.3 (Dell PC) Camera Node Command Center 1.5 Manage Video Collection HW.4 IP Camera Network 1.5 Manage Video Collection P Electrical Power
	← Video Data	1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data P Electrical Power

9 Interfaces

Table 87 S.5 WILIFE COTS SW External I/O

Functions	Interface Items	Interfacing Elements
1.5 Manage Video Collection	→ Infrastructure Elements	1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.1 Monitor Domain HW.4 IP Camera Network 1.1 Monitor Domain P Electrical Power 1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data P Electrical Power 1.4 Store Video Data HW.3 (Dell PC) Camera Node Command Center 1.4 Store Video Data P Electrical Power
	→ Sensor Coverage Assignments Assigned.NAE.07	1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.1 Monitor Domain HW.4 IP Camera Network 1.1 Monitor Domain P Electrical Power 1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power

9 Interfaces

Table 87 S.5 WILIFE COTS SW External I/O

Functions	Interface Items	Interfacing Elements
		1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data P Electrical Power

Table 88 T.1 Blob Tracker External I/O

Functions	Interface Items	Interfacing Elements
2.0 Track	→ Target Track Data	3.0 Classify (Conduct Behavior Analysis) B Behavior Analysis Module 3.0 Classify (Conduct Behavior Analysis) HW.1 Mac Server 3.0 Classify (Conduct Behavior Analysis) P Electrical Power 3.0 Classify (Conduct Behavior Analysis) S.1 MATLAB 3.0 Classify (Conduct Behavior Analysis) S.4 MS SQL SERVER 3.1 Read Contact Data Files HW.1 Mac Server 3.1 Read Contact Data Files P Electrical Power 3.1 Read Contact Data Files S.1 MATLAB 3.1 Read Contact Data Files S.3 MS ACCESS 3.1 Read Contact Data Files S.4 MS SQL SERVER
	← Process Signals/Sensor Data.NAE.07	1.2 Determine Contact Presence HW.4 IP Camera Network 1.2 Determine Contact Presence P Electrical Power 1.2 Determine Contact Presence S.5 WILIFE COTS SW
	← Video Data	1.3 Collect Video Data

9 Interfaces

Table 88 T.1 Blob Tracker External I/O

Functions	Interface Items	Interfacing Elements
		P Electrical Power 1.0 Detect HW.3 (Dell PC) Camera Node Command Center 1.0 Detect HW.4 IP Camera Network 1.0 Detect P Electrical Power 1.0 Detect S.5 WILIFE COTS SW 1.3 Collect Video Data HW.4 IP Camera Network 1.3 Collect Video Data S.5 WILIFE COTS SW

Part II - Logical Interfaces

Network Interface [UUV-IF-0005]

Physical Links:
Network Comms I/F [UUV-LNK-0015]

Part III - Physical Interfaces

L.0 Watchman LAN

Transmitted Data:
WSSN Tasking Order Data

Connecting Elements:
HW.1 Mac Server
HW Hardware Suite
Context.0 Watchman WSSN System Context

L.1 Request Link

Description:
Physical connection between tactical customers and the BAM

Protocol: TCP/IP

Capacity: 100.0 Kbits

Delay: 0.1 Millisecond

Transmitted Data:
Analysis Request

Connecting Elements:
C.2 Tactical Customers
C.1 Watchman Maritime Smart Environment (WMSE) System Context
Context.0 Watchman WSSN System Context

L.2 Command Link

Description:
Physical connection between the Watchman C2 and the SUWC

Protocol: TCP/IP

Capacity: 100.0 Kbits

Delay: 0.1 Millie

Transmitted Data:
CT.5 Sensor Coverage Assignments Assigned.NAE.07
Cue ISR and Combat Systems.NAE.07

L.3 Sensor Product Link

Description:
Physical connection between the integrated sensor fusion node and the Watchman C2

Protocol: TCP/IP

Capacity: 100.0 Kbits

Delay: 0.1 Millie

Transmitted Data:
CT.4 Collect Sensor Data.NAE.07
Sensor Data Sent to C2 System.NAE.07

L.4 Product Delivery Link

Description:
Physical connection for product delivery between the BAM and the tactical customers

Protocol: TCP/IP

Capacity: 100.0 Kbits

Delay: 0.1 Millie

Transmitted Data:
CT.6 Process Signals/Sensor Data.NAE.07
O.2.1 Requested Information.NAE.07
Alert Message.NAE.07
Generate Predictive Analysis Products.NAE.07

Connecting Elements:
C.2 Tactical Customers

C.1 Watchman Maritime Smart Environment (WMSE) System Context
Context.0 Watchman WSSN System Context

L.5 Watchman Network Link

Description:
Physical connection between Watchman C2 and the BAM

Protocol: Ethernet

Capacity: 100.0 Mbits

Transmitted Data:
O.2.6 Update Battlespace Picture.NAE.07
Assign Track Category.NAE.07
Receive Alert Message.NAE.07
Threat ID Determined.NAE.07
Threat to Own Ship Determined.NAE.07

L.6 BAM Intranet

Description:
Physical connection between functional modules within the BAM

Protocol: Ethernet

Capacity: 1.0 Gbit

Transmitted Data:
CT.6 Process Signals/Sensor Data.NAE.07
O.2.1 Requested Information.NAE.07
Alert Message.NAE.07
Analysis Request
Assign Track Category.NAE.07
Establish Communications Link.NAE.07
Format Alert Message.NAE.07
Generate Predictive Analysis Products.NAE.07
Prepare Alert Message.NAE.07
Receive Alert Message.NAE.07
Sensor Data Sent to C2 System.NAE.07
Threat Evaluation.NAE.07
Threat ID Determined.NAE.07
Threat to Own Ship Determined.NAE.07
Track confirmed to be Target of Interest.NAE.07

L.6.1 BAM HW-SW Link

Description:
Connects BAM SW elements to the BAM CPU

Capacity: 1.0 Gbit

Transmitted Data:
CT.4 Collect Sensor Data.NAE.07

CT.6 Process Signals/Sensor Data.NAE.07
O.2.1 Requested Information.NAE.07
Alert Message.NAE.07
Analysis Request
Assign Track Category.NAE.07
Format Alert Message.NAE.07
Generate Predictive Analysis Products.NAE.07
Prepare Alert Message.NAE.07
Threat Evaluation.NAE.07
Threat ID Determined.NAE.07
Threat to Own Ship Determined.NAE.07
Track confirmed to be Target of Interest.NAE.07

L.6.2 BAM Behavior Analysis Link

Description:
Connects BAM Behavior Analyzer to common Node

Capacity: 1.0 Gbit

Transmitted Data:
CT.6 Process Signals/Sensor Data.NAE.07
Threat Evaluation.NAE.07

L.6.3 BAM Contact Classification Link

Description:
Connects BAM Contact Classifier to common Node

Capacity: 1.0 Gbit

Transmitted Data:
Assign Track Category.NAE.07
Threat ID Determined.NAE.07
Threat to Own Ship Determined.NAE.07
Track confirmed to be Target of Interest.NAE.07

L.6.4 BAM Alert Generation Link

Description:
Connects BAM Alert Generator to common Node

Capacity: 1.0 Gbit

Transmitted Data:
Alert Message.NAE.07
Format Alert Message.NAE.07
Prepare Alert Message.NAE.07

L.7 WSSN Agent Link

Protocol: Bluetooth Class II v2.0

Capacity: Normal (μ: 2.0, stdDev: 0.5, stream: 1) Mbps

Transmitted Data:
Contact Detected
Contact Position
Diags SAT
Pri Tasking
Required Data Type
Task Agent Designation

Connecting Elements:
S.2 WSSN Agent
Context.0 Watchman WSSN System Context

L.8 WSSN Agent Detection Link

Connecting Elements:
S.2.1 WSSN Agent CPU
S.2.3 WSSN Agent Detection Sensors

L.9 WSSN Agent Collection Link

Connecting Elements:
S.2.1 WSSN Agent CPU
S.2.2 WSSN Agent Collection Sensors

L.10 WSSN Agent Comms Link

Transmitted Data:
WSSN Tasking Order
WSSN Tasking Order Response

Connecting Elements:
S.2.1 WSSN Agent CPU
S.2.4 WSSN Agent Comms

L.11 Distribution Service Link

Description:
The physical connection between the BAM and the Distribution Service.

Connecting Elements:
S.1.2 Distribution Service

L.12 Subscription Service Link

Description:
The physical connection between the BAM and the Subscription Service.

Transmitted Data:
Establish Communications Link.NAE.07

Connecting Elements:
S.1.3 Subscription Service

L.13 User Validation (Subscriber)

Description:
The physical connection between the subscription service and the external user validation service.

Connecting Elements:
C.4 User Validation Service
C.1 Watchman Maritime Smart Environment (WMSE) System Context
Context.0 Watchman WSSN System Context
S.1.3 Subscription Service

L.14 External Distribution Services

Description:
Physical connection between external customers and the distribution service

Connecting Elements:
C.3 External Customers
C.1 Watchman Maritime Smart Environment (WMSE) System Context
Context.0 Watchman WSSN System Context
S.1.2 Distribution Service

Computer to Nav I/F [UUV-LNK-0003]

Description:
This link defines the control interface between the Mission computer to the Navigation subsystem.

Data Storage Control I/F [UUV-LNK-0007]

Description:
This link defines the control interface between the system computers to the Data Storage subsystem.

9 Interfaces

External Environment I/F [UUV-LNK-0008]

External Power [UUV-LNK-0009]

Human-Machine I/F [UUV-LNK-0013]

Mission Plan I/F [UUV-LNK-0014]

Network Comms I/F [UUV-LNK-0015]

Power to Comms I/F [UUV-LNK-0016]

Power to EO/IR I/F [UUV-LNK-0024]

Power to Nav & Cntrl I/F [UUV-LNK-0018]

Power to Platform Comp. I/F [UUV-LNK-0019]

Description:

Computer receives power from the power subsystem.